Neutrinos at the Main Injector (NuMI) Project

Project No. 98-G-304
Progress Report No. 71
October 1-31, 2004
(G. Bock, A.L. Read - Editors)
(NuMI-1062)

I. PROJECT DESCRIPTION

The NuMI Project provides for the construction of an intense, variable energy, beam of neutrinos using the Fermilab Main Injector, as well as large underground neutrino detectors located at Fermilab and Soudan, Minnesota. The purpose of the project is to enable a new generation of long baseline neutrino experiments that can decisively detect and accurately measure neutrino oscillations. Detection of such oscillations would firmly establish a non-zero value of neutrino mass. The neutrino beam will be of sufficient energy that experiments capable of identifying muon neutrino to tau neutrino oscillations are feasible. The scope of the NuMI Project includes the excavation of large underground laboratories to house the neutrino beam system and the MINOS detectors.

II. OVERVIEW OF PROJECT STATUS – G. Bock

We continue to make excellent progress on installation of NuMI components in the Main Injector tunnel. All components in the MI-60 region have been installed and checkout has begun. In the target hall the target/baffle module was installed, and pulse testing of the neutrino horns began.

In October, work proceeded on hooking up the magnet power supply for the Near Detector. The DAQ worked well throughout the month and cosmic ray data were collected routinely to be used for module alignment. Atmospheric neutrino data was routinely collected with the Far Detector.

Several L3 milestones were completed. The review of the NuMI Shielding Assessment and Safety Assessment Document by the DOE FSO/CH Accelerator Readiness Review (ARR) Support Team was successfully completed. There were no injuries on the NuMI project this month.

Overall progress across the NuMI project continues to be very good. The project is well over 99% complete and completion is expected within a few months.

More detailed information on the project's progress and status this month follows in the rest of this report.

III. MASTER SCHEDULE AND FUNDING SUMMARY

The NuMI DOE Project Master Schedule is shown in Figure 1.

The DOE baseline milestones are shown in the figure as solid squares. These fixed milestones are defined in the DOE Project Execution Plan and the Baseline Change Proposal approved in December 2001. Shown as diamonds on the same line are the project's baseline projected dates for achieving the milestones. Actual dates of achieving milestones are shown as inverted black triangles.

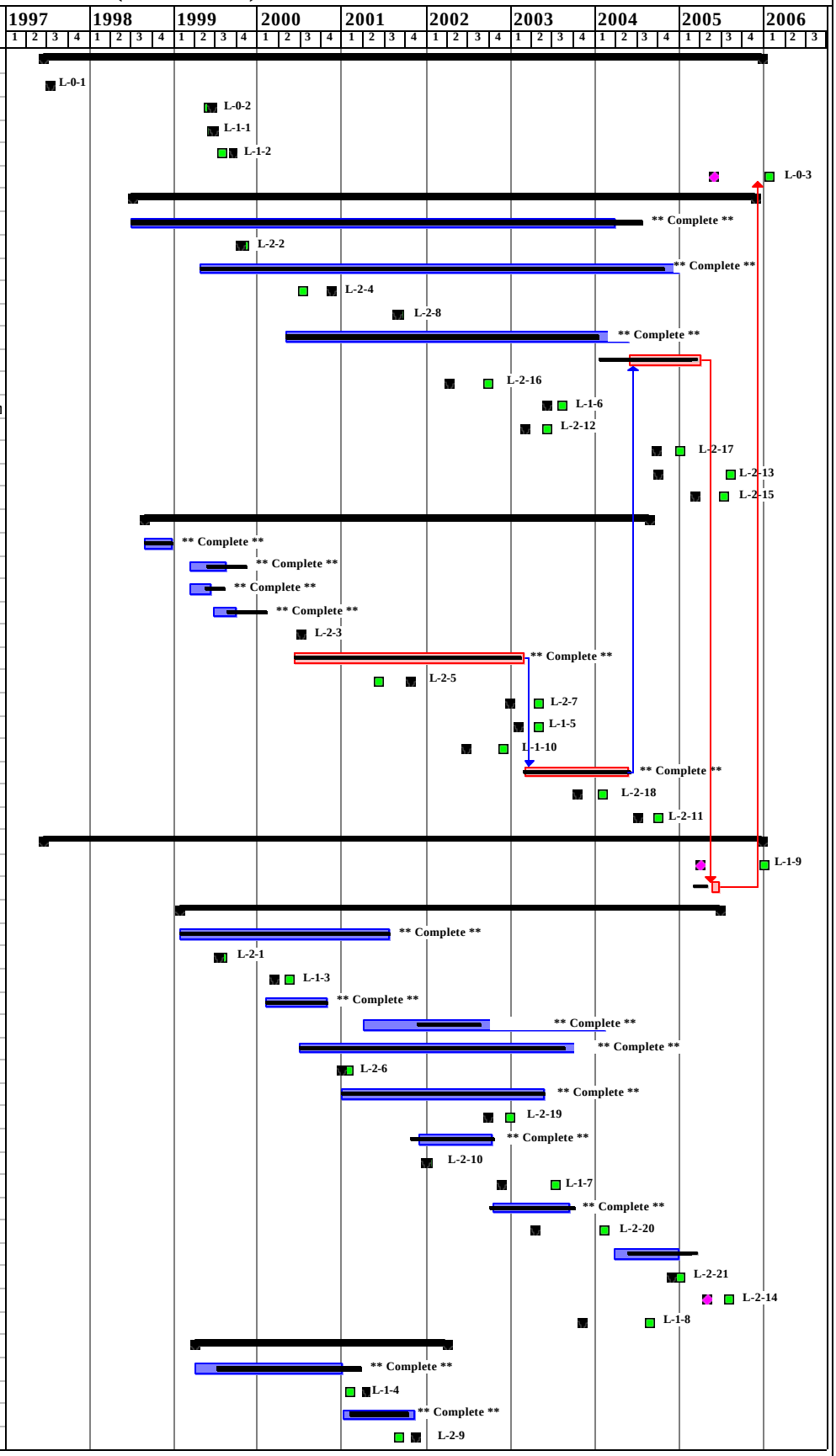
Our actual progress is indicated by black 'thermometer' lines within the horizontal (baseline schedule) bars.

A Table titled "DOE Milestones vs. Current Forecast" follows immediately after the Project Master Schedule. That table lists all the approved Level 0-1-2 DOE milestone dates along with the project's current (and previous month's) forecast for achieving them. The list is sorted by DOE Milestone date. Milestones with forecast dates that have changed significantly in the last month are discussed in Section VIII of this report.

As always the TEC and OPC profiles are presented in the Funding Summary.

12/16/04

NuMI Project
(Fiscal Years)



Project: NuMI_Master_Sched
Date: 12/16/04

Baseline Task
Critical Task
Summary Task
DOE Baseline Milestone
FNAL Current Projection
Milestone Complete
FNAL Forecast
Task Status

DOE Milestone vs Current Forecast
(Sorted by DOE Milestone Date)

12/16/2004

Milestone Description	PEP Milestone #	DOE Milestones (As of 12/2001)	Last Month's Forecast Milestone (10/2004)	Current Month's Forecast Milestone (11/2004)	DOE Milestone Variance (Cal Days)	Monthly Variance (Cal Days)	Notes
CD-1 Approve Mission Need	L-0-1	3/17/1997	3/17/1997	3/17/1997	0	0	Complete
CD-3a Start Limited Construction	L-1-1	2/15/1999	2/23/1999	2/23/1999	(8)	0	Complete
CD-2 Approve Baselines	L-0-2	2/17/1999	2/17/1999	2/17/1999	0	0	Complete
CD-3b Continue Construction	L-1-2	3/31/1999	5/21/1999	5/21/1999	(51)	0	Complete
MINOS Steel Purchase Subcontract Awarded	L-2-1	4/1/1999	3/15/1999	3/15/1999	17	0	Complete
Top of Soudan #8 Mineshaft Located with GPS	L-2-2	6/28/1999	6/16/1999	6/16/1999	12	0	Complete
Far Detector Prototype Erected	L-1-3	1/17/2000	11/10/1999	11/10/1999	68	0	Complete
NTP Issued for Fermilab Underground Subcontract	L-2-3	3/6/2000	3/6/2000	3/6/2000	0	0	Complete
High Current Pulse into Prototype Horn	L-2-4	3/14/2000	7/14/2000	7/14/2000	(122)	0	Complete
CalTech Factory Commissioned	L-2-6	9/29/2000	9/1/2000	9/1/2000	28	0	Complete
Far Detector Excavation Complete	L-1-4	10/2/2000	12/22/2000	12/22/2000	(81)	0	Complete
Fermilab Underground Construction 50% Complete	L-2-5	2/6/2001	6/29/2001	6/29/2001	(143)	0	Complete
Magnets for MI Stub Refurbished	L-2-8	4/30/2001	4/30/2001	4/30/2001	0	0	Complete
Outfitting of Far Detector Enclosure Complete	L-2-9	4/30/2001	7/19/2001	7/19/2001	(80)	0	Complete
Cosmic Rays Observed in Far Detector	L-2-10	3/22/2002	8/31/2001	8/31/2001	203	0	Complete
Technology Choice Made for Muon Monitors	L-2-16	5/30/2002	12/10/2001	12/10/2001	171	0	Complete
Service Building & Outfitting Bid Package Out	L-1-10	7/30/2002	2/25/2002	2/25/2002	155	0	Complete
75% Scintillator Produced	L-2-19	8/30/2002	5/24/2002	5/24/2002	98	0	Complete
Near Detector Hall Excavation Complete	L-2-7	12/30/2002	8/30/2002	8/30/2002	122	0	Complete
Target Hall Excavation Complete	L-1-5	12/30/2002	10/4/2002	10/4/2002	87	0	Complete
Lambertson & C-Magnets Assembled & Tested	L-2-12	2/1/2003	10/31/2002	10/31/2002	93	0	Complete
First Far Detector Super Mod Complete & Tested	L-1-7	3/15/2003	7/24/2002	7/24/2002	234	0	Complete
Inner & Outer Conductors for First Production Horn Assembled	L-1-6	4/14/2003	2/5/2003	2/5/2003	68	0	Complete
Target Service Building Shell Complete	L-2-18	9/30/2003	6/17/2003	6/17/2003	105	0	Complete
Near Plane Pre-assembly Complete	L-2-20	10/10/2003	12/17/2002	12/17/2002	297	0	Complete
Far Detector Complete & Tested	L-1-8	4/25/2004	7/9/2003	7/9/2003	291	0	Complete
Beneficial Occupancy of Service Buildings at Fermilab	L-2-11	5/31/2004	3/10/2004	3/10/2004	82	0	Complete
Start Commissioning with Both Near and Far DAQ	L-2-21	8/30/2004	8/2/2004	8/2/2004	28	0	Complete
Complete Installation of Horn Power Supply	L-2-17	9/1/2004	5/28/2004	5/28/2004	96	0	Complete
MI Stub Installation Complete	L-2-15	3/11/2005	11/11/2004	11/11/2004	120	0	Complete
Near Detector Complete & Tested	L-2-14	3/31/2005	12/27/2004	12/27/2004	94	0	
First Horn Installed	L-2-13	4/7/2005	6/1/2004	6/1/2004	310	0	Complete
Start Commissioning	L-1-9	9/1/2005	12/22/2004	12/3/2004	272	19	
CD-4 Start Operations	L-0-3	9/30/2005	2/1/2005	2/1/2005	241	0	End of Commissioning

IV. FUNDING SUMMARY (K$)

Funding Summary (as of 10/31/2004), amounts in thousands

YEAR	TEC (NuMI Facility) Appropriations	OPC (MINOS, Soudan) Obligations
		Actual costs through FY04. Plan from Baseline Change Proposal
Prior FY's	0	1,417 actual
FY98	5,500	2,348 actual
FY99	14,300	4,114 actual
FY00	22,000	11,324 actual
FY01	22,949[1]	13,598 actual
FY02	11,400	17,227 actual
FY03	19,842[1,2,3]	7,067 actual
FY04	12,426[2,4]	2,109 actual
FY05	751[2,3,4]	2,996
TOTALS	**109,168**	**62,200**

Note [1]: FY01 Rescission removed $51K from plant line and $26K from OPC. We planned the restoration of these funds in FY03.

Note [2]: FY03, FY04, and FYY05 plant line funds as recommended for inclusion in the Baseline Change Proposal by the September DOE Review and approved in December 2001. This is the $33.042M in additional funding in the rebaseline proposal from Project Management.

Note [3]: FY03 Rescission removed $251K from plant line. We show the restoration of these funds in FY05.

Note [4]: FY04 Rescission removed $73.750K from plant line. This funding was NOT restored and the TPC of the project was correspondingly reduced.

TEC Funding Appropriated,
Not yet authorized
375[5]

Total TEC funding authorized
108,417

TEC Obligations to date, (Not including requisitions in progress)
107,329 59,323 **OPC Obligations to date**

TEC Funding authorized but not obligated
1,088

Note [5]: FY05 first Continuing Resolution allocation.

V. NARRATIVE HIGHLIGHTS

MANAGEMENT HIGHLIGHTS – G. Bock

There were no change requests presented this month.

Supplemental Agreement No. 18, the final modification to the NuMI Tunnels and Halls contract was approved and fully executed in October.

The review of the NuMI SA and SAD by the DOE FSO/CH Accelerator Readiness Review (ARR) Support Team was successfully completed. The NuMI SAD was then given to PPD and AD ES&H Departments for formal review. Their comments were received and addressed. The SAD is now being signed-off by the PPD and AD Heads. The ES&H Section is reviewing this final copy of the SAD. Full approval of the NuMI SAD should be completed in November.

The Project continues to report its progress against its own plan, which has a more aggressive schedule than that required by DOE milestones. The Project Support staff has developed a chart that provides the DOE NuMI Project Manager with a progress report against the DOE milestones.

Procurement Highlights – R. Huite

NuMI Tunnels and Halls (T&H) NuMI Closeout Team

On October 11, 2004, S. A. Healy Company returned two signed copies of Supplemental Agreement No. 18; the Consent of Surety Form; final invoice summary; pay request; and progress payment certification form. The Head, Business Services Section signed SA No. 18 and it was mailed to SAH on October 12, 2004.

The SAH's subcontract No. 527522 totals $40,282,667 through and including Supplemental Agreement No. 18. On October 15, 2004, final payment in the amount of $5,802,551 was wire transferred and confirmation received from SAH that payment was received on October 15.

Subcontract closeout and file storage are underway.

NuMI Surface Buildings and Outfitting

The subcontract was awarded to Ragnar Benson, Inc. (RBI), of Park Ridge, Illinois in the amount of $17,880,000. The RBI's subcontract No. 546631 totals $20,596,074.49 through Supplemental Agreement No. 15. Payment has been made in the total amount of $20,596,074.49.

The final closeout report for the RBI subcontract is scheduled for November 4, 2004.

NuMI Technical Components

The BS/Procurement Coordinator continues to be available to assist the NuMI Project.

NuMI FACILITY AT FERMILAB
TECHNICAL COMPONENTS (WBS 1.1) – B. Baller, N. Grossman

Overview

We continue to make excellent progress on installation of NuMI components in the Main Injector tunnel. All components in the MI-60 region have been installed and checkout has begun. Vacuum connections were made up and the beamline pumped down to a few microns. All instrumentation was installed in the Pre-Target area, completing milestone L-3-311. Power supply and magnet testing in the Carrier Tunnel and Pre-Target areas has demonstrated the achievement of milestone L-3-274.

The target/baffle module was installed in the target chase, satisfying milestone L-3-270. Work continues on the Target Hall chase air-cooling system. We are projecting completion of this major system in late November. Pulse testing of the neutrino horns began satisfying milestone L-3-319.

The hadron monitor was delivered to Fermilab, satisfying milestone L-3-217. All of the muon monitors were installed, satisfying milestone L-3-255.

Cable pulls were completed in the Pre-Target and Target Halls satisfying milestone L-3-253. All controls modules were installed and are now reading out via ACNET, satisfying milestone L-3-279.

Integration and Installation – R. Andrews

General Remarks

The work of installation in the Absorber and Detector Halls is virtually complete. There are a few small "clean-up" tasks to be done in early November. The work of the shutdown is being completed on schedule, and there are efforts to begin initial checkouts of some of the installed systems in the Main Injector. As resources from the shutdown become available, they will be incorporated into the final remaining tasks in the Pre-Target and Target Halls.

Main Injector

The shutdown continues to go according to schedule. Kicker magnet testing went very well, and is now ready for beam. The upstream half of the MI-60 vacuum system has been leak checked and is being pumped down. All instrumentation is connected and checkout has begun. The final alignment is half done but on schedule. The water leak between "Peter's Porch" and the upper Carrier Tunnel has been contained with a drip pan. Quadrupole magnet cooling plates have been installed, and the LCW connections completed. The Carrier Tunnel vacuum pipe was found to be an inch low at the upstream end, and has been corrected.

MI-65

Above Ground Areas

The PV-9 Pond Pump Upgrade was initially successful and put into operation. Pond Pump "A" was taken out of service due to excessive vibration; it was then removed and sent back to Wadsworth Pump for warranty repairs. This will not affect magnet power supply testing in the near future due to the seasonally cool weather and satisfactory operation of Pond Pump "B". Magnet and power supply testing has been proceeding in a ramping mode. Preparations for filling the SR1, SR2 and SR3 site riser plugs with concrete are in progress.

Carrier and Pre Target Areas

Cable pulls for instrumentation, vacuum, and controls continued. Additionally, a team of technicians continued to terminate installed cables at their specific devices (BPM's, Multiwires and Loss Monitors) in the beam line and at the control racks in the electrical support rooms. These same activities proceeded in the Target Hall and adjacent support rooms for Horns 1 & 2, the Target module, and for the water processing skids controls. Beam line vacuum in the Carrier and Pre-Target tunnel was maintained. Work on the vacuum system in the Carrier and Pre-Target area remains postponed until vacuum for upstream elements in the NuMI stub of the Main Injector can be installed and leak checked. Level run surveys, Main Injector "tie-in shots" and alignment of BPM's and Multiwires in the Pre-Target and Carrier tunnels have all been moving along nicely.

Target Hall and Support Rooms

Fabrication and installation of the air system for target chase cooling system continues, with the supply side ductwork riser and transition installation having been completed. Duct sections for processing and circulating air through the chase continue to be fabricated and installed. The air system blower base installation is underway. We have taken delivery of the air system blower assembly and variable speed motor control along with the pre-heaters for the heat exchanger unit. Further tests and prep work were completed on the horn power supply system and buss work (stripline). Tests of Horns 1 & 2 operation have been successful (despite Raw Skid performance).

MINOS

General

The backup generator at MINOS SB is still a rental unit because the natural gas generator is still not on line. FESS Engineering has determined that a modification in the gas piping is needed before another load test is scheduled. The design is complete. FESS Operations has scheduled the modification work. The modifications are expected to be completed the first of November. With the modifications, the gas flow capacity will not be in question, and then another load test will be scheduled.

Minor modifications were made in sump pumps 1-3 controls. The main change was to eliminate the hand-off-auto switches at the tunnel level.

Absorber

The thermocouple readout cables were extended all the way to the readout relay racks.

The design of new stair steps going up onto the decay pipe walkway was completed. Fabrication of the stairs was completed the last day of October. Installation of the stairs is scheduled the first week in November.

The installation of the cooling water headers and connection of the cooling lines to the absorber have been completed. Commission the cooling system is scheduled for the first part of November.

Filling of the "bead box" with poly-beads is scheduled for the first week in November.

The enclosure radiation system in the absorber area is complete.

Muon Alcoves

All Muon tubes have been attached to the support stands. The installation of gas lines and connection of readout cables is in progress.

Tunnel/Shaft Area

Water mitigation was completed within the shaft and either side of the shaft within the tunnel. A bit of the mitigation work is yet to be done to contain about five drips.

A new trench was cut across the aisle upstream of the downstream fire doors. The trench will direct any drain water flowing down the west side of the access tunnel to the Weir side of the sump pit.

The two down spouts from the shaft drainage were also routed to the weir side of the sump pit. The two down spouts add 50 GPM or more to the cooling water side of the sump.

Detector

480 VAC cables were connected to the 150kW power supply. The DC cables were connected between the PS and reversing switch and the reversing switch and the coil. AC power was connected to the reversing switch. Thermal protection switches were cabled to the PS, as well as remote control/readback cables. Cooling water hoses have been connected to the coil and power supply. Commissioning of the power supply system will be done in November.

Primary Beam (WBS 1.1.1) – S. Childress

Overview

Excellent progress continues to be made on extraction and primary beam work during the 2nd month of the accelerator shutdown. All beam system components have been installed in the

complete primary beam line, with the exception of a single beam loss monitor by the downstream shield wall entrance, which awaits cable installation.

Priority efforts now are toward final component alignment, vacuum leak checks, and checkouts and planning for initial low intensity NuMI primary beam commissioning at the conclusion of the shutdown.

Magnets and Stands

All NuMI primary beam magnets are installed, first alignment is complete, LCW hookup and cable connections are complete, and klixon thermal sensors are installed. Power testing has been ongoing in the Pre-target region during Thursday – Sunday periods throughout the month, and will commence in the Main Injector area in early November.

EPB dipole shield installation, for fringe field mitigation near the Recycler ring, is complete.

Kicker Magnet System – C. Jensen

Installation of the kicker magnet system is complete. Since mid-October, the magnets are being pulsed at full power and at varying cycle times, to include the optimal operational mode of a cycle each 2 seconds. Detailed pulse stability studies continue, to determine optimal parameters for operation under conditions of different pulse cycle times and load response to thermal conditions.

Beam Instrumentation – D. Harris

All primary beam instrumentation has been installed, with the one exception noted above. First alignment of all instrumentation is complete. Detailed checkout is ongoing for each system.

A problem, excess voltage to ground, was found with end-caps for two of the four total loss monitors. These have been replaced with a more robust end-cap design for all four TLM's. Hook-up of the return gas line for the TLM's is in progress, with all other TLM installation work complete.

Detailed checkout of instrumentation is in progress, including readout and control through the ACNET control system.

Beam Permit System – R. Ducar

Full checkout of installed Beam Permit System facilities will commence in November in preparation for anticipated beam operations in December.

Neutrino Beam Devices (WBS 1.1.2) – J. Hylen, D. Ayres, K. Anderson, A. Stefanik

I. Magnetic Focusing Horns and their Modules

The horns and their modules remain in the target chase. The first pulse testing of horns in the target hall started October 27. On October 28 we ran for two hours at full power and repetition rate (200kA pulse every 1.87 seconds), then shifted to other tests. The vibration of horn 2 hanging from the module was less than 1 mil, which is excellent. Thermal imaging of the stripline connections to the horns showed no hot spots. Pulse testing will continue through mid-November. Some of the remaining items are: vibration measurement of horn 1, running the horn under computer control, a study of performance and reliability during a few days of continuous operation, troubleshooting the magnetic field monitors, thermal scan of stripline after extended running, readout of module thermocouples, testing of horn 1 motor drives, installation of automatic shutoff valves in the RAW skids (needed for running unattended), and replacement of RAW pumps with larger capacity water pumps (needed for running with beam).

II. Target, Baffle, Carrier and Module

A special fixture was constructed and used to align the remounted target to the target carrier rail to about 7 mils rms. The carrier was transported to the target hall and re-mounted on the target module. Target/carrier/module were installed in the target pile chase on October 18.

The RAW connections were made, and water circulated through the target from the target RAW skid.

Minor modification of the target support module was done to improve radiation shielding.

For the target vacuum/helium system, the major remaining parts were ordered: flow control valve, controller, pressure gauge, flow limiting orifice, pressure relief valve, and filter.

After the accelerator shutdown, when a survey crew is available, a measurement of target to carrier to module alignment will be done in the work cell.

III. Target Hall Shielding/Cooling

Recirculating Air Cooling System.

The 100 horsepower fan, fan variable speed drive, and heater were delivered in October. The manufacturer for the remaining major deliverable for this system (chiller plus pump-skid) is behind schedule; delivery may be late November. Delivery of the heater control is expected November 12. Some instrumentation remains to be ordered, as well as a passive damper.

The filter bank was mounted, and the vertical ducts from the R-block cover were installed. The fan mounting platform is ready. Installation of the ductwork has taken longer than estimated, but should finish about the end of November. Chiller installation and instrumentation should be finished mid-December.

Concrete Covers. The final 5 "R"-block concrete cover shielding blocks were delivered by the vendor. The concrete-block "battlement" around the horns that the R-blocks will rest on is nearing completion. The last 30 R-blocks cannot be installed until the horn testing is finished. The concrete target chase cover must be in place before the air cooling system can be operated for the first time.

As requested by ES&H, a safety fence around the horn stripline will be designed and installed before beam-turn-on.

IV. Radioactive component handling

Cameras for remote handling. The first wall camera was mounted and tested, and cabling run. The remote control provided by the manufacturer was at the wrong frequency, and was exchanged for the correct frequency. The location of one crane camera is in conflict with a temporary trolley used for installing the air system; aside from that camera, we should finish camera installation in November.

Work Cell. Installation of the lead-glass viewing windows and survey ports was completed in October. The work cell is now complete (although the stairs are temporarily dismounted to allow air system installation).

Lifting/Transportation fixtures. The remaining lifting fixture needed for remote handling (of blue shielding blocks) was delivered.

Hot Handling tests. All steps for remotely replacing the horns and target after they are irradiated must be tested. It is estimated this will require about 40 shifts. After those tests, a final survey of component locations and re-sealing of the air system must be done to be ready for beam running. The hot handling tests are expected to start in mid-November, but which steps can be done will be limited by interference with the installation/testing of the air system.

V. Instrumentation/Electronics

About half the assembly work on the ionization chamber mount/feed-throughs for the horn cross-hair system was done in October. We expect to finish assembly and install the chambers during November.

The electronics boards for the horn field and current monitoring were tested; some modifications are required. Progress was made on the thermocouple readout as well.

VI. Administrative/Project Management

Milestone L-3-270 "Target & Horn Installation Complete", scheduled for 10/8/04 was achieved October 20. Two other WBS 1.1.2 milestones remain.

Milestone L-3-290 "Shielding Installation Complete (Pre-Hot Handling)" (11/18/04) essentially only requires placement of the remaining R-blocks. Given the state of the air system, it appears more efficient to go directly to hot-handling tests in November, and seal up the air system with the R-blocks early in December, delaying this milestone by about three weeks.

We should achieve on time Milestone L-3-295 "Pulse & Checkout Horn System Complete" (12/7/04), with the caveat that running with reasonable beam power will require the replacement of the RAW water pumps with higher capacity pumps.

To be ready for beam commissioning, we also need to complete hot horn and target handling tests and do a final re-alignment of the target and horns after the tests. Including some interruption for primary beam tests in December, this work is expected to be complete mid to late January.

Power Supply Systems (WBS 1.1.3) – G. Krafczyk

Horn Power Supply - K. Bourkland

The horn pulsing commenced late afternoon on Wednesday, Oct. 27 under local (function generator) control. Before the evening was out 185 kA operation at a rep-rate of 1.87 seconds was achieved and some vibration data taken. Video thermal images were taken and recorded of the Horn 1/stripline connections by remote control. Pulsing continued on Thursday, October 28 and within 2 minutes of start-up, operation was established at 200 kA and a 1.87 second rep-rate. Operations continued uninterrupted for 2-1/2 hours, 4,200 shots, while additional vibration data were collected. Similar video imaging and recording were simultaneously conducted and completed for horn 2. Thermal images to date indicate that the stripline is operating as expected. A 5 to 6 hour run is needed for the stripline to reach thermal equilibrium, at which time thermal video imaging/recording will be conducted of the balance of the stripline.

Transfer of control from local to remote later on October 28 revealed a control signal polarity issue that has since been corrected. Remote operation will be the start-up mode when operations next commence.

So far, all is looking very good.

Extraction Kicker Power Supply - C. Jensen

Kicker tests started in earnest early in the month. Final measurements will take place early next month.

Conventional Power Supplies - S. Hays

Testing of power supplies continued at MI_65. The V118 string is nearing completion with good indication that it will meet the specification of 60 ppm. Additional tests of regulation vs. water temperature are expected early next month.

The first set of 20KW PEI power supplies at MI_65 is complete and specification measurement is under way.

Decay Region & Hadron Absorber (WBS 1.1.4) – D. Bogert, C. James

In October the manifolds were welded to the core cooling piping and the entire system was pressure tested. Now that the piping is complete the water system will be filled and the pumps

and heat exchangers will be tested. At then end of the month the poly bead box had still to be filled with the poly beads.

The muon chambers have been mounted on the muon chamber stands in alcoves 1, 2, and 3. Gas and electrical hookup is underway for the muon chambers. The hadron monitor was delivered and awaits the completion of the stairs/access platform to facilitate installation.

The MINOS shaft crane was in service throughout the month of October with no lost time.

The parts for the stair to replace the partially blocked stairway at the entrance to the decay tunnel were delivered, and sub-assembly units were fabricated. The stairs are ready for installation and are scheduled to be installed the first week of November.

Neutrino Beam Monitoring (WBS 1.1.5) – D. Harris, S. Kopp

Detectors: A total of 30 muon tubes are now delivered to FNAL (27 + 3 spare).
An additional 2 spare tubes will remain at UT Austin for contingency. One muon tube appears to have sustained damage during shipping. All the muon tube detectors are installed in the alcoves on their support stands. Final alignment of the detectors relative to the beam coordinates is complete, with estimated accuracy relative to surveyors' markers of <1/4". The dominant installation misalignment will come from the location of the absorber cavern relative to the beam axis, which is estimated to have a 1" uncertainty.

The Hadron Monitor was delivered as well. It was checked after shipping and no problems were found. Installation in the absorber was postponed to allow easier access to the slot in the shielding from a new platform at the east side of the absorber. This platform was completed Oct. 30, so the Hadron Monitor will go in during early November. Prior to shipping to FNAL, its calibration was completed, and the relative chamber-to-chamber constants established to +- 3%, sufficient for beam commissioning.

Gas System: This system was installed from scratch starting Oct. 5. Included are a bottle manifold at the bottom of the MINOS shaft, a supply line up the access passageway, a distribution rack near the absorber fire doors, and supply lines to each of the alcoves and to the Hadron Monitor location. The rack distribution system is complete and most of the instrumentation for the gas system is now being read out through ACNET, although a few devices remain to debug in the readout. The complete system is leak checked. Currently Alcoves 1 and 2 are flushing helium in anticipation of the early December date for first low-intensity beam to the absorber. Alcove 3 will not be flushed so as to maintain the inert nitrogen fill of the chambers, which gives larger signals in the detectors for the anticipated low intensity. A readout page in ACNET was written and is operational.

Electronics: electronics have been supplied from Al Franck in the Instrumentation Department. Cabling to the detectors commenced in the last week of October, and will be completed in early November. Initial noise studies appear satisfactory, with a few issues remaining to be resolved. Portions of the HV distribution system are still to be installed, and some work remains to debug the software to establish and read back voltages through ACNET. An event display program has been written, as has software to perform electronics checking during beam operations.

Survey, Alignment & Geodesy (WBS 1.1.6) – W. Smart

"Rough" (initial, before service connections are made) alignment of NuMI beam elements continued and was completed in both the main injector and the pre-target area. Final alignment in the main injector is well underway and was completed upstream of the crossover area (between the main injector and the NuMI stub) by the end of October.

Additional control measurements were made throughout the NuMI proton beam areas to verify the laser tracker measured network used to align the beamline elements. These control measurements included precise angles, laser distances, and gyro-theodolite measured directions with respect to true north.

The survey engineer effort for NuMI in October was 3.4 mw, with 1.0 mw used to improve the network ties between the main injector and NuMI pre-target, rough (0.6 mw) and final (1.6 mw) alignment of NuMI beam elements in the main injector, and 0.2 mw to complete rough alignment in the pre-target area. In addition, the survey engineer gave a well-received paper on NuMI alignment to the 8th International Workshop on Accelerator Alignment held at CERN, Switzerland in early October.

Beamline Utilities (WBS 1.1.7) –D. Pushka

General

Activities presently underway for WBS 1.1.7 include: Running the MI-62 system and the PV-9 pond water system, running the target RAW system, commissioning the Horn 1 and Horn 2 systems, and installing vacuum beam pipe, pumps, and instrumentation in the Main Injector.

Upstream LCW System

The MI-62 LCW System is operating.

The new PV-9 pond water pumps were operated in October. A vibration with one pump was observed. This pump has been removed and returned to the vendor for in-warranty repair. Meanwhile, the system continues to operate satisfactorily on the other pump.

Remaining, low priority activities include removal of the spray nozzles on the pond G spray bar (these are neither necessary nor desirable) and installation of a variable speed drive on one of the two PV-9 pond pumps to lower electrical consumption during the cooler periods of the year. These activities can wait until other more pressing activities are completed.

A CR to add the scope of PV-9 replacement pond water pumps to WBS 1.1.7 has not yet been initiated.

Final Horn Raw System

The horn 1 and horn 2 RAW systems have been operated and the circulation pumps have not performed as required, as reported last month. However, pump operation has been good enough to allow horn testing without beam.

Meanwhile, alternate pumps have been ordered and will replace the existing pumps. Receipt of the new pumps is expected in November and will likely be installed by December.

Upstream RAW System.

The system is operating. All appears satisfactory.

Downstream (Absorber) RAW System.

Piping has been completed and QA examination is scheduled to occur in November. Instrumentation awaits effort for the controls department to finish the job. Once the QA examination is completed, the system will be filled and testing will commence.

Vacuum Decay Pipe Cooling

The work to tie all piping between the upstream and downstream decay pipe cooling skids has been completed. Field wiring for the decay pipe cooling systems has been installed. Motors have been bumped to check phase rotation. The system has been filled with water and has been operated. Instrumentation termination started in September, but is not complete. The system should be fully operational in November.

Extraction and Primary Beam Vacuum System

Technicians from PAB, led by Ron Davis (PPD/Mechanical Department), are installing the NuMI primary beam vacuum system. The portion of the beam line vacuum in the Main Injector is nearly complete and has been evacuated to the several micron range. All beam pipe in the pre-target area has been installed, welded, evacuated, and leak checked. One or two known leaks in the MI-65 accessible portion of the beam line remain. This work is on schedule to be completed before the end of the shutdown.

Decay Pipe Vacuum System

The decay pipe vacuum system has been commissioned and is complete. The decay pipe has been at one half an atmosphere since May and will be re-evacuated in November in preparation for beam at the conclusion of the shutdown.

Gas Systems

T&M work to run gas lines in the Main Injector tunnel and in MI-62 and into the mechanical support room under MI-65 has been completed. Oxygen deficiency hazard (ODH) analyses have been completed for all gas systems (even those outside of the scope of WBS 1.1.7, including a peer review and a review by the NuMI ES&H QA review committee. All areas will be ODH class 0.

Controls, Interlocks and Cable Installation (WBS 1.1.8) – R. Ducar

October again saw much progress in bringing WBS 1.1.8 and other associated electrical installation activities to closure. Cable installation and associated terminations are essentially completed. Milestone L-3-253 "Pre-Target Hall and Target Hall Cable System Installation Complete" was achieved on 13-Oct-2004. Additionally, all of the installed cables in the enclosure are now terminated. There remain only a few cables in the MI-65 area that remain to be terminated.

Milestone L-3-279 "Controls Installation Complete" was also achieved on 27-Oct-2004. The bulk of Controls hardware has been installed and operating for some time now. This hardware includes fiber optic repeaters, network access points, VME and CAMAC crates and their modules, multiplexed A/D converters (MADCs) and associated analog entry boxes, various PLC instances, motion control systems, and SWIC Scanners for profile monitors and hadron/muon monitors at the Absorber. Checkout of these installed components has been proceeding extremely well. The valuable contributions of Controls personnel is especially acknowledged with gratitude and thanks for their extended efforts related to NuMI controls. Good progress continues with database entries. Assignments of MADC and timing channels are well documented and current.

Electrical activities covered a wide variety of tasks. The air sampling shelters at EAV-1, -2 and -3 were connected to AC power. Sump pump controllers at MINOS were modified for easier and more reliable operation. The video image of the sump area at the bottom of the MINOS shaft is now on the Lab-Wide CATV system (8GeV Trunk, Channel 3). Remnants of the mine phone system was removed from all NuMI underground enclosures, thereby obviating potential radioactive waste. Electrical service was provided for a beamline air compressor and radiation monitoring equipment. The area at the beginning of the NuMI Stub formerly occupied by a temporary 30-foot shield wall required some electrical remediation. A fluorescent fixture was re-installed and several crushed electrical conduits were replaced. 120 VAC electrical service was also added at the downstream end of the NuMI Stub.

The sole remaining milestone for WBS 1.1.8, L-3-325 "Controls Checkout Complete" is on schedule with completion anticipated in November.

MINOS DETECTORS (WBS 2.0) – R. Rameika

Overview

In October, we worked on hooking up the magnet power supply. The DAQ worked well throughout the month and cosmic ray data were collected routinely to be used for module alignment. We expect to energize the coil in mid-November.

There are no more installation statistics to report. Below is the last Level 2 report. Level 1 reports will continue until all project elements have been closed out and CD-4 has been achieved.

Near Detector Installation (WBS 2.5) – C. James, J. Thron

The work on the coil is almost finished. The power supply and the current reversing switch were installed and connected to the coil leads. The cooling water pumps were connected and the outer connection/insulation were put on the coil. The safety documentation for the turn on, testing, and operation is being written.

The B-dot cabling from the detector to the readout has been completed and the B-dot computers are being tested.

VI. ES&H HIGHLIGHTS – M. Andrews

Management Overview – M. Andrews

Mike Andrews, the NuMI Project ES&H Coordinator and John Cassidy, NuMI Project Field Safety Coordinator continued to provide ES&H support for the Installation Phase of the NuMI Project. Their primary efforts are to provide ES&H support to the floor managers and task managers for all installation activities. They also provide oversight of the implementation of the T&M and Fixed Price subcontractors' safety programs, which includes concurring with the subcontractor on where improvements are needed and the priority for those improvements. Additional efforts include attending pre-shift safety meetings at MI-65 and MINOS to verify continuing improvement, hazard analysis review and participating in daily and weekly ES&H Inspections with the site Floor Manager and representatives from the DOE Fermi Area Office.

The NuMI Project ES&H Coordinator chairs a weekly meeting with members of the NuMI project management team to discuss work planning issues, ES&H/QA review updates and issues, hazard analysis issues, training issues, facility safety issues, and general ES&H program issues.

ES&H support personnel and NuMI/MINOS floor managers for the installation phase of the project meet on a daily basis to discuss the daily schedule, upcoming tasks, related ES&H requirements, hazard analyses, ES&H training and other ES&H issues. They also review and plan for upcoming tasks in the schedule.

The project has continued to experience equipment malfunctions with the natural gas emergency generator at the MINOS facility. The manufacturer completed testing of the equipment and repairs are in progress. In the interim the FESS-OPS organization installed a temporary diesel generator to support the emergency equipment within the MINOS facility.

The Project continues to provide NuMI/MINOS site tours through the FNAL Educational Office twice a week for laboratory employees on Tuesdays and Wednesdays. The tours have been well received and have proceeded safely. All tour participants receive a visitor's safety orientation and are escorts by two experienced tour guides. The tour duration is approximately 1.5 hours.

NuMI Beam Safety Issues – M. Andrews

The NuMI Project ES&H Coordinator (Mike Andrews) and the NuMI ES&H/QA Committee Chair (Keith Schuh) meet on a weekly basis to discuss and coordinate the process for completing upcoming equipment reviews by the committee. They also discuss the status of reviews that are in progress.

Weekly Installation Meetings continue to occur between NuMI Project ES&H personnel, Floor Managers and L2/L3 Managers. The topics discussed include installation procedures, hazard analyses, equipment ES&H/QA reviews and upcoming schedule issues.

The NuMI Project ES&H Coordinator and the Deputy Coordinator for Installation continued to schedule and completed multiple site tours of the MI-65 and MINOS sites, which were attended by numerous Accelerator and Particle Physics Division Department Heads. These tours were initiated to orient these individuals with both above and below ground facilities for future use and occupancy.

Installation Safety – M. Andrews

A daily meeting is held between the MI-65 and MINOS Floor Managers, the NuMI Project ES&H Coordinator, and the Field Safety Coordinator to discuss installation activities for the day, upcoming activities, hazards analyses, installation procedures and ES&H/QA review status.

NuMI Project Management, FNAL ES&H Section, and DOE Area Office performed multiple ES&H reviews and audits during the month of October 2004. NuMI Project Management conducted ES&H Inspections on October 7th, 14th, 21st, and 28th, 2004. Results of an inspection were communicated to the MI-65 and MINOS Floor Managers at the closeout meeting held immediately following the inspection.

MI-65 and MINOS Floor Managers are holding daily work planning meetings with all site workers, which includes a review of task hazards. T&M subcontractor personnel are holding weekly toolbox meetings. NuMI Project Management is monitoring these meetings on a regular basis.

Task Managers are developing task related HAs and submitting Hazard Analysis documentation for review and acceptance to the NuMI Field Safety Coordinator for all new tasks. ES&H personnel and Floor Managers also met with members of the Fermi support groups to review tasks and explain the requirements to complete those tasks, as they relate to schedule and ES&H.

There were no OSHA-recordable injuries during the month of October 2004.

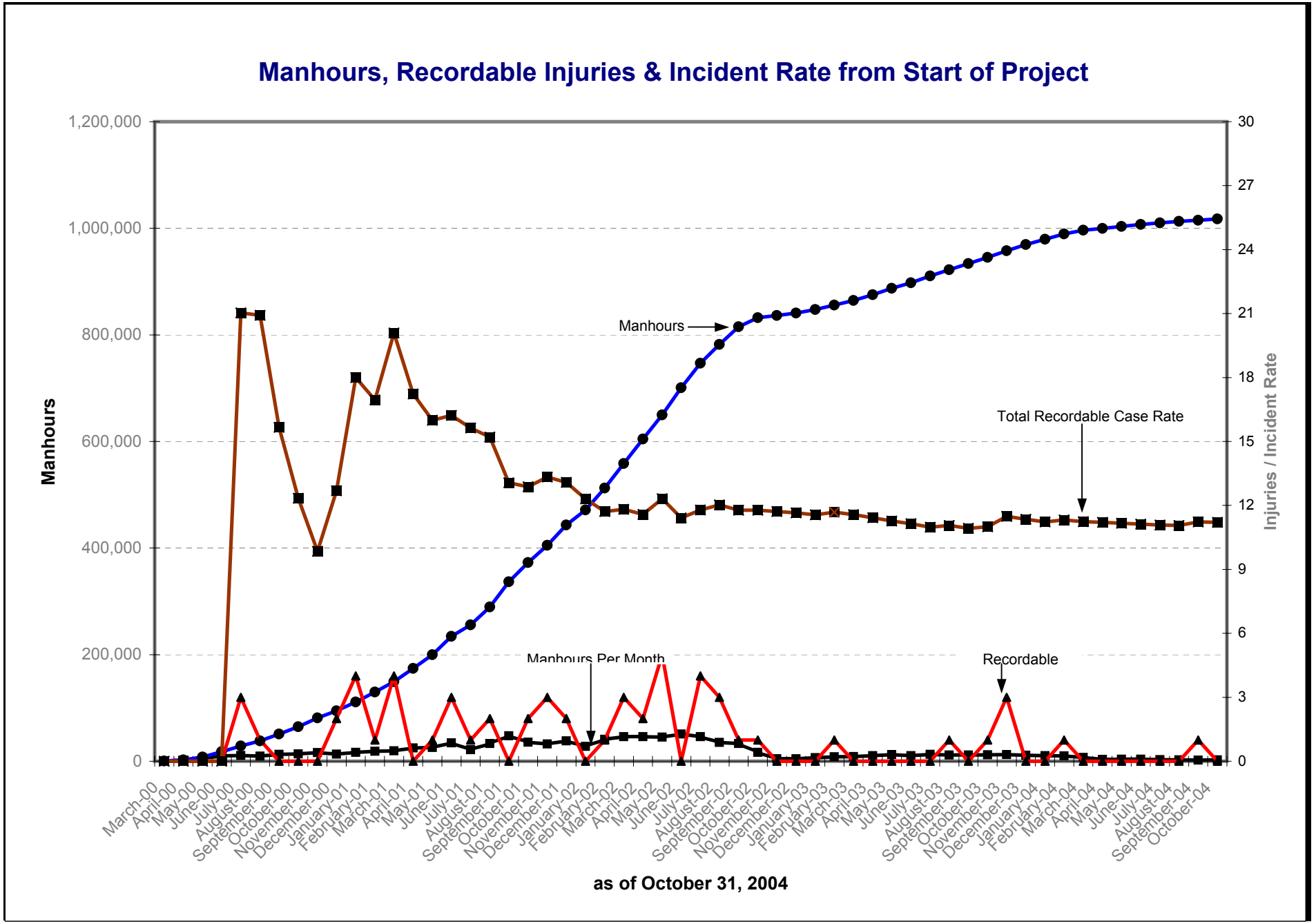
The NuMI Project had completed 46 days without an OSHA-recordable injury or illness.

Project Safety Performance

Safety Performance for the NuMI Construction/Installation Project for 2004 Calendar Year to Date includes a Recordable Incident Rate of 8.2**,** a Lost Time Incident Rate of 0.0, and a Lost Workday Incident Rate of 0.0. The Project to Date Safety Performance includes a Recordable

Incident Rate of 11.2, a Lost Time Incident Rate of 2.6, and a Lost Workday Incident Rate of 7.1. Figure 2 shows man-hours worked, and recordable injury and incident rates from the start of the NuMI construction subcontracts through October 2004.

NuMI TUNNEL and HALLS PROJECT
CONTRACTOR'S INJURY DATA



Radiation Safety – N. Grossman

The review of the NuMI SA and SAD by the DOE FSO/CH Accelerator Readiness Review (ARR) Support Team was successfully completed. The NuMI SAD was then given to PPD and AD ES&H Departments for formal review. Their comments were received and addressed. The SAD is now being signed-off by the PPD and AD Heads. The ES&H Section is reviewing this final copy of the SAD. Full approval of the NuMI SAD should be completed in November. Several meetings were held discussing the NuMI Readiness Review process and sign-off requirements. AD, PPD and the ES&H Section are in agreement on the process. The kick-off meeting for the ARR Committee will be held mid November with an eye to completion near the end of November.

VII. LEVEL 3 MILESTONES

The current NuMI/MINOS Level 3 Milestones are shown in Figure 3. Milestones for the period 7/04 to 9/05 are shown. The triangles are the fixed Fermilab milestones. Note that we show L3 milestones along with the new "L-3-n" identifiers. Actual dates of achieving milestones are shown as black diamonds. Currently projected dates for achieving milestones are shown as hollow diamonds. Projected milestone dates which differ from the fixed Fermilab milestone dates by more than two weeks are flagged as **<Late>** or **<Early>**.

VIII. VARIANCE ANALYSIS – G. Bock

Variances are reported in the cost and schedule reports against the NuMI Project's plan, which is considerably more aggressive than that required by the DOE milestones. In all cases the project remains comfortably ahead of schedule with respect to the DOE milestones and within baseline cost.

We include the Variance Summary Table. Cost and schedule variances against the project's plan are extracted from the Cost Tables in Section IX and shown here at Level 2.

DOE Milestones

Planning for installation and commissioning continues to be a focus for the final stages of the NuMI project. There were no significant changes in the forecast dates for any of the remaining DOE milestones. The forecast dates for all remaining DOE milestones continue to include comfortable amounts of float.

NuMI (WBS 1.1)

There is no schedule variance. This month the cumulative cost variance is reported at ($390K). We are accumulating some variances in the installation work that is now in its final stages. In November or December we will prepare a change request to reflect this as well as the positive variances in other parts of WBS 1.0 described next. We still expect the total contingency use to be within the forecast presented to the DOE Office of Science review committee in May. Project

management is paying careful attention to this, but remains pleased at the overall cost performance here.

NuMI (WBS 1.2)

Schedule variance: The work is complete. There is no schedule variance.

Cost variance: A slight positive cost variance remains after incorporating the effects of the final settlement of all outstanding contract issues.

NuMI (WBS 1.3)

Cost variance: There is a favorable cost variance reported at $315K.

MINOS (WBS 2)

Cost and Schedule variances: Closeouts of WBS 2 elements continue. There are no significant cost or schedule variances.

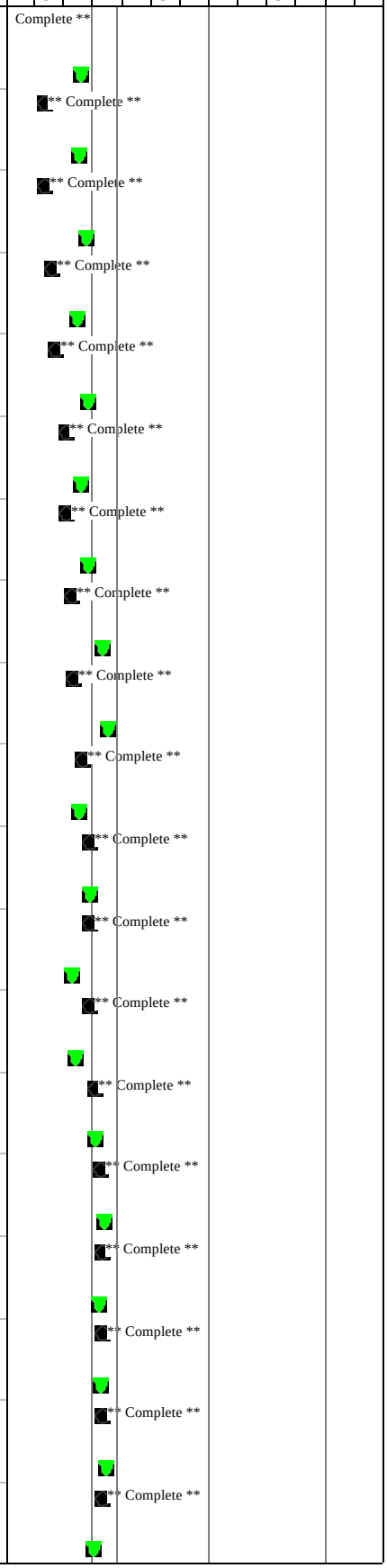
MINOS Cavern and Project Support (WBS 3)

The MINOS Cavern outfitting is complete. There are no significant variances in WBS 3.

NuMI WBS Level 3 Milestones
(7/2004 - 9/2005)

12/16/04

Mlstn#	WBS Lev	Name	FNAL Cur Forecast	FNAL Base Date	Float
L-3-215	111	Lambertson Magnet Installation Complete	10/10/03	7/23/04	0 d
L-3-214	118	FIRUS Cable System Installation Complete	3/29/04	7/14/04	0 d
L-3-236	116	Network in Target Hall	3/31/04	8/6/04	0 d
L-3-250	113	Power Supply Refurbishing Complete	4/26/04	7/9/04	0 d
L-3-239	114	Test of VacuumIntegrity Complete	5/3/04	8/13/04	0 d
L-3-254	112	Compl Placement of Horn 1 into Target Station	6/1/04	7/19/04	0 d
L-3-314	112	Compl Placement of Horn 2 Assy into Target Station	6/7/04	8/9/04	0 d
L-3-232	114	Start Absorber Outer Shielding Installation	6/24/04	9/23/04	0 d
L-3-256	114	Assy of Core on Carrier Complete	7/2/04	10/11/04	0 d
L-3-271	111	Target Interface Baffle/Window Ready for Install	7/28/04	7/12/04	0 d
L-3-276	113	Complete Assy/Installation of Stripline	8/17/04	8/19/04	0 d
L-3-252	111	Instrumentation Ready to Install (Except Profile Monitors)	8/20/04	6/21/04	0 d
L-3-309	112	Assy of Target Baffle on Module Complete	8/20/04	7/5/04	0 d
L-3-251	111	Profile Monitor Construction Complete	9/1/04	9/1/04	0 d
L-3-277	113	Compl Install & Testing of Kicker PS	9/22/04	10/5/04	0 d
L-3-324	118	NuMI Stub Cables Installed	9/27/04	9/13/04	0 d
L-3-257	118	MI60 Cable Syst Install Compl (Excl Trim Elements)	9/28/04	9/20/04	0 d
L-3-318	113	Power Test of MI60 & MI-62 Power Supplies Complete	9/29/04	10/8/04	0 d
L-3-259	118	Personnel Safety Interlock System Installation Complete	9/29/04	8/27/04	0 d

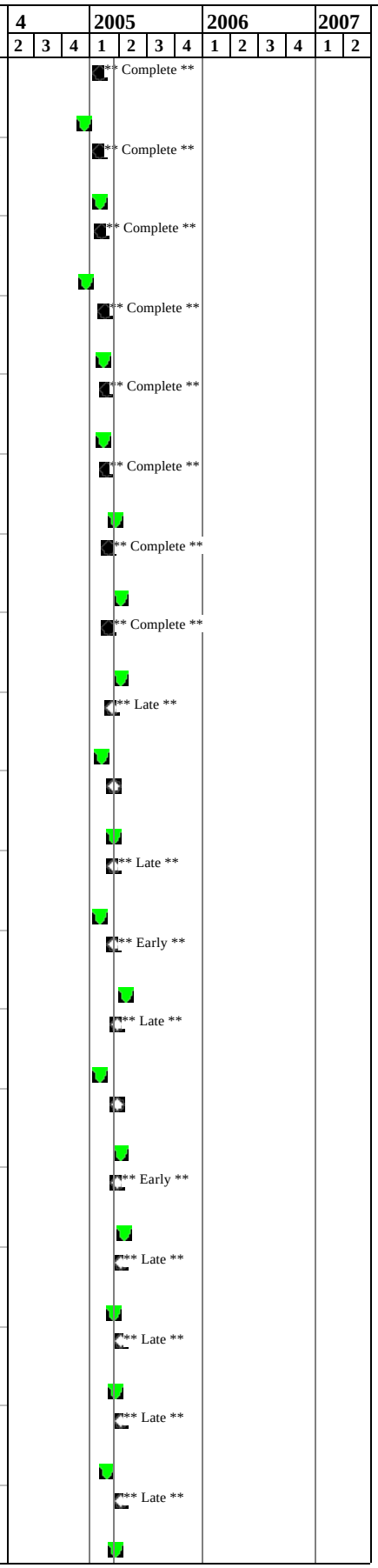


FNAL Current Forecast FNAL Baseline Date Milestone Complete

NuMI WBS Level 3 Milestones
(7/2004 - 9/2005)

12/16/04

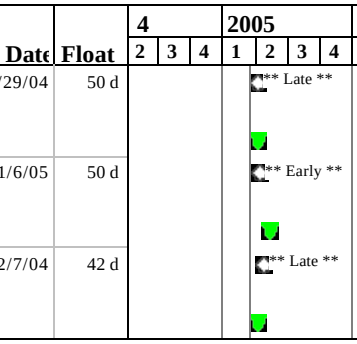
Mlstn#	WBS Lev	Name	FNAL Cur Forecast	FNAL Base Date	Float
L-3-321	117	All Water System Skid Instrumentation Connected	9/30/04	8/6/04	0 d
L-3-293	118	MI-62 Cable System Installation Complete	9/30/04	9/24/04	0 d
L-3-217	115	Downstream Hadron Monitors Ready for Installation	10/1/04	8/9/04	0 d
L-3-255	115	Muon Monitors Installed	10/11/04	10/6/04	0 d
L-3-270	112	Target & Horn Installation Complete	10/18/04	10/8/04	0 d
L-3-319	113	Start to Pulse & Checkout Horn System	10/18/04	11/19/04	0 d
L-3-279	118	Controls Installation Complete	10/27/04	12/7/04	0 d
L-3-253	118	Pre-Targ Hall & Targ Hall Cable Syst Installation Compl	10/27/04	12/6/04	0 d
L-3-258	115	Downstream Hadron Monitor Installed	11/5/04	10/1/04	72 d
L-3-291	111	MI Stub Installation Complete	11/11/04	11/15/04	56 d
L-3-311	111	Install Pre-target Instrumentation Complete	11/15/04	9/23/04	67 d
L-3-294	114	Checkout Absorber Complete	11/15/04	12/20/04	66 d
L-3-274	113	Power Test of TH Conventional Power Supplies Compl	11/23/04	9/22/04	57 d
L-3-299	111	Extraction & Primary Beam Checked Out	11/24/04	12/1/04	59 d
L-3-325	118	Controls Checkout Complete	11/24/04	12/14/04	59 d
L-3-278	111	Pre-Target Checkout Complete	11/30/04	11/8/04	57 d
L-3-290	112	Shielding Installation Complete (Pre-Radioactive Component Handling)	12/1/04	11/18/04	43 d
L-3-297	115	Downstream Hadron Monitor Operational	12/1/04	10/20/04	56 d
L-3-272	117	All Water Systems Checked Out	12/2/04	11/19/04	52 d



FNAL Current Forecast ◘ FNAL Baseline Date ▼ Milestone Complete ●

NuMI WBS Level 3 Milestones
(7/2004 - 9/2005)

Mlstn#	WBS Lev	Name	FNAL Cur Forecast	FNAL Base Date	Float
L-3-298	117	VacuumSystems Checked Out	12/6/04	11/29/04	50 d
L-3-296	115	Muon Monitors Operational	12/9/04	1/6/05	50 d
L-3-295	112	Pulse & Checkout Horn System Complete	12/21/04	12/7/04	42 d

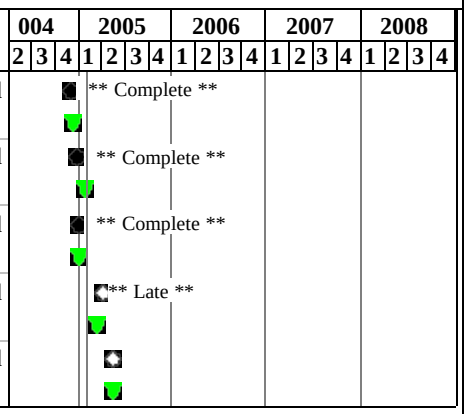


FNAL Current Forecast FNAL Baseline Date Milestone Complete

MINOS WBS Level 3 Milestones
(7/2004 - 9/2005)

12/16/04

Mlstn #	WBS Lev 3	Name	FNAL Cur Forecast	FNAL Base Date	Float
L-3-338	253	50% of Calorimeter Planes Installed	7/14/04	7/19/04	0d
L-3-339	253	100% Detector Planes Installed	8/11/04	9/7/04	0d
L-3-342	253	Calorimeter Readout Installed	8/12/04	8/16/04	0d
L-3-343	253	Obtain PORC for Magnet Operation	11/15/04	10/18/04	91d
L-3-306	250	Near Detector Installation Complete	12/27/04	12/24/04	66d



FNAL Current Forecast FNAL Baseline Date Milestone Complete

Variance Summary Table

(Cumulative to Date as of 10/31/04)

WBS / Description	Budgeted Cost		Actual Cost	Variance	
	Work Scheduled	Work Performed	Work Performed	Schedule	Cost
1.1 Technical Components	28,798	28,791	29,181	(7)	(390)
1.2 Facility Construction	74,652	74,652	74,586	0	66
1.3 Project Management	3,405	3,406	3,091	0	315
1.0 TEC Total	**106,856**	**106,849**	**106,857**	**(7)**	**(8)**
2.1 Magnets: Steel & Coils	7,621	7,621	7,622	0	(1)
2.2 Scintillator Detector Fabrication	19,525	19,525	19,520	0	5
2.3 Electronics, DAQ & Database	9,172	9,173	9,134	1	39
2.4 Far Detector Installation	4,581	4,581	4,577	0	4
2.5 Near Detector Installation	5,350	5,326	5,384	(24)	(58)
2.6 MINOS Project Management	1,663	1,664	1,693	1	(29)
UK In-Kind Contribution	(4,835)	(4,835)	(4,835)	(0)	0
2.0 MINOS Detector	**43,078**	**43,055**	**43,095**	**(22)**	**(40)**
3.1. NuMI Conceptual Design	1,934	1,934	1,928	0	6
3.2 MINOS Detector R&D	1,768	1,768	1,768	(0)	0
3.3 MINOS Cavern	14,527	14,527	14,527	0	0
3.4 Soudan/MINOS Operating	1,677	1,677	1,677	0	(0)
Minnesota Preconstruction Funds	(758)	(758)	(758)	0	0
Minnesota Contruction Funds FY99	(3,000)	(3,000)	(3,000)	0	0
3.0 NuMI Project Support	**16,148**	**16,148**	**16,142**	**0**	**6**
OPC Total	**59,225**	**59,203**	**59,237**	**(22)**	**(34)**
TPC Total	**166,081**	**166,052**	**166,094**	**(29)**	**(42)**

IX. COST REPORTS

Cost and earned value reports for the NuMI Project are presented in two sets, one for WBS 1.0 Total Estimated Cost (TEC), and a second for Other Project Costs (OPC) that includes both the MINOS Detector (WBS 2.0) and Project Support (WBS 3.0). Information for all segments of the project is summarized at WBS Level 3 except in the case of the OPC CURVE Reports that are at WBS Level 2 instead. The actual cost of work performed (ACWP) is comprised of the following: 1) costs collected and reported by the Fermilab financial system, 2) costs collected and reported to NuMI Project Management by the University of Minnesota in their monthly progress report for WBS 3.3 MINOS Cavern, and 3) an estimate of the value of work performed by the United Kingdom (UK) collaborating institutions towards their in-kind contribution. Since the UK collaborating institutions are not required to report their actual costs to NuMI Project Management, we are assuming that actual current period costs and cumulative costs are equal to current period earned value and cumulative earned value, respectively. Each set of cost and earned value reports includes the following:

CPR Format 1A
This is a modified version of the traditional CPR Format 1 report that shows indirect cost for each WBS Level 3 rather than as a single line item for the entire project. As a result it is possible to review the status of both burdened and unburdened costs for each major system or cost component. In addition, the report for the OPC includes a summary section at the end, with WBS Level 2 totals for the MINOS Detector and Project Support segments of the project.

CPR Format 3
This is the traditional format for reporting changes to the project baseline that were approved and implemented in the current reporting period, as well as their impact on the time phased project baseline.

CURVE Reports
The project is so close to completion that these graphical reports have ceased to convey any useful information and have been removed.

Plan v Act Reports
These reports compare burdened planned costs (BCWS) with burdened actual costs (ACWP) on a cumulative basis through the end of the prior fiscal year, and by month for the current fiscal year. There are two versions of this report, one for total cost, and a second for labor costs only. Both OPC versions exclude the value of UK In-Kind Contributions and thus represent US Funds only.

NuMI Project Obligations
This report reflects burdened obligations to date, including requisitions in progress, for the entire project, as recorded in the Fermilab financial system. Consequently, it does not include any assumed obligations with respect to work performed by the UK collaborating institutions. Nor does it reflect actual amounts obligated by the University of Minnesota under the grant for WBS 3.3 MINOS Cavern; instead, obligations shown for WBS 3.3 represent the cumulative amount of the Financial Plan transfers to the University of Minnesota from the Fermilab budget.

NuMI Project TEC

($000's Omitted)

Cost Performance Report - Work Breakdown Structure

Contractor:	Fermi National Accelerator Laboratory	Contract Type/No:		Project Name/No:	Report Period:
Location:	Batavia, Illinois			NuMI TEC	9/30/04 10/31/04

Quantity	Negotiated Cost	Est. Cost Authorized Unpriced Work	Tgt. Profit/ Fee %	Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling
1	109,168	0	0 0	109,168	0		0	0

WBS[2] / WBS[3] / Results...	Current Period					Cumulative to Date					At Completion		
	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance				
Item	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Budgeted	Latest Revised Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1.1 Technical Components													
1.1.1 Extraction & Primary Beam													
Direct Cost + Escalation	8	6	38	(2)	(32)	4,617	4,621	4,836	4	(215)	4,627	4,627	0
Indirect Cost	2	2	7	(0)	(6)	1,006	1,007	1,102	1	(95)	1,009	1,009	0
WBS[3]Totals:	10	8	46	(2)	(38)	5,623	5,628	5,938	5	(310)	5,637	5,637	0
1.1.2 Neutrino Beam Devices													
Direct Cost + Escalation	86	96	189	10	(93)	9,091	8,878	9,202	(213)	(324)	9,170	9,170	0
Indirect Cost	19	19	33	1	(13)	2,145	2,107	2,031	(38)	76	2,167	2,167	0
WBS[3]Totals:	104	115	221	11	(106)	11,237	10,985	11,233	(252)	(248)	11,338	11,338	0
1.1.3 Power Supply System													
Direct Cost + Escalation	11	21	62	9	(41)	4,298	4,278	4,390	(20)	(111)	4,305	4,305	0
Indirect Cost	4	5	15	1	(11)	1,038	1,031	1,030	(6)	1	1,040	1,040	0
WBS[3]Totals:	15	25	77	10	(52)	5,336	5,310	5,420	(26)	(110)	5,345	5,345	0
1.1.4 Hadron Decay and Absorber													
Direct Cost + Escalation	53	6	10	(47)	(4)	1,161	1,288	1,289	127	(1)	1,294	1,294	0
Indirect Cost	10	2	2	(9)	0	262	288	276	26	12	290	290	0
WBS[3]Totals:	64	8	12	(56)	(4)	1,424	1,576	1,566	153	11	1,584	1,584	0
1.1.5 Neutrino Beam Monitoring													
Direct Cost + Escalation	6	21	(1)	15	22	436	419	434	(17)	(15)	455	455	0
Indirect Cost	0	0	0	0	(0)	26	25	38	(0)	(13)	26	26	0
WBS[3]Totals:	6	21	(1)	15	22	462	445	472	(17)	(28)	481	481	0
1.1.6 Alignment Systems													
Direct Cost + Escalation	5	0	0	(5)	0	229	228	161	(1)	67	235	235	0
Indirect Cost	1	0	0	(1)	0	66	66	41	0	25	67	67	0
WBS[3]Totals:	6	0	0	(6)	0	295	294	202	(1)	92	301	301	0
1.1.7 Water, Vacuum & Gas Systems													
Direct Cost + Escalation	23	27	35	4	(8)	1,660	1,658	1,771	(2)	(114)	1,674	1,674	0
Indirect Cost	7	9	6	1	2	407	407	381	0	26	411	411	0
WBS[3]Totals:	31	36	41	5	(5)	2,066	2,065	2,152	(2)	(87)	2,085	2,085	0
1.1.8 Installation and Integration													
Direct Cost + Escalation	52	39	30	(13)	9	1,867	1,974	1,804	107	170	1,988	1,988	0
Indirect Cost	14	7	5	(7)	2	426	453	331	27	122	456	456	0
WBS[3]Totals:	66	47	35	(20)	11	2,293	2,427	2,135	133	292	2,445	2,445	0
1.1.9 Hadronic Hose (Close-out)													
Direct Cost + Escalation	0	0	0	0	0	53	53	54	0	(0)	53	53	0
Indirect Cost	0	0	0	0	0	9	9	9	0	(0)	9	9	0
WBS[3]Totals:	0	0	0	0	0	62	62	63	0	(1)	62	62	0
WBS[2]Totals:	303	260	431	(42)	(171)	28,798	28,791	29,181	(7)	(390)	29,277	29,277	0

NuMI Project TEC

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor: Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:				
Location: Batavia, Illinois							NuMI TEC		9/30/04	10/31/04			
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work	Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling			
1	109,168		0	0	0	109,168	0		0	0			
WBS[2]	Current Period					Cumulative to Date					At Completion		
WBS[3]	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance				
Results...	Work	Work	Work			Work	Work	Work				Latest	
Item	Scheduled	Performed	Performed	Schedule	Cost	Scheduled	Performed	Performed	Schedule	Cost	Budgeted	Revised Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1.2 Facility Construction													
1.2.1 Facility Physics Design Phase													
Direct Cost + Escalation	0	0	0	0	0	49	49	52	0	(3)	49	49	0
Indirect Cost	0	0	0	0	0	21	21	19	0	2	21	21	0
WBS[3]Totals:	0	0	0	0	0	70	70	70	0	(0)	70	70	0
1.2.2 Facility Construction Title I Design Phase													
Direct Cost + Escalation	0	0	0	0	0	1,254	1,254	1,288	0	(34)	1,254	1,254	0
Indirect Cost	0	0	0	0	0	184	184	149	0	35	184	184	0
WBS[3]Totals:	0	0	0	0	0	1,438	1,438	1,437	0	1	1,438	1,438	0
1.2.3 Facility Construction Title II Design Phase													
Direct Cost + Escalation	0	0	0	0	0	2,620	2,620	2,807	0	(187)	2,620	2,620	0
Indirect Cost	0	0	0	0	0	355	355	167	0	188	355	355	0
WBS[3]Totals:	0	0	0	0	0	2,975	2,975	2,974	0	1	2,975	2,975	0
1.2.4 Facility Construction Phase													
Direct Cost + Escalation	0	0	1	0	(1)	68,572	68,572	68,599	0	(27)	68,572	68,572	0
Indirect Cost	0	0	0	0	(0)	1,596	1,596	1,505	0	91	1,596	1,596	0
WBS[3]Totals:	0	0	1	0	(1)	70,169	70,169	70,105	0	64	70,169	70,169	0
WBS[2]Totals:	0	0	1	0	(1)	74,652	74,652	74,586	0	66	74,652	74,652	0
1.3 Project Management													
1.3.1 FY 98 Project Management													
Direct Cost + Escalation	0	0	0	0	0	208	208	104	0	104	208	208	0
Indirect Cost	0	0	0	0	0	66	66	37	0	29	66	66	0
WBS[3]Totals:	0	0	0	0	0	275	275	141	0	133	275	275	0
1.3.2 FY 99 Project Management													
Direct Cost + Escalation	0	0	0	0	0	425	425	512	0	(88)	425	425	0
Indirect Cost	0	0	0	0	0	135	135	149	0	(14)	135	135	0
WBS[3]Totals:	0	0	0	0	0	560	560	661	0	(102)	560	560	0
1.3.3 FY 00 Project Management													
Direct Cost + Escalation	0	0	0	0	0	436	436	521	0	(85)	436	436	0
Indirect Cost	0	0	0	0	0	139	139	142	0	(3)	139	139	0
WBS[3]Totals:	0	0	0	0	0	575	575	663	0	(88)	575	575	0
1.3.4 FY 01 Project Management													
Direct Cost + Escalation	0	0	0	0	0	522	522	331	0	191	522	522	0
Indirect Cost	0	0	0	0	0	166	166	92	0	74	166	166	0
WBS[3]Totals:	0	0	0	0	0	688	688	423	0	265	688	688	0

NuMI Project TEC

($000's Omitted)

Cost Performance Report - Work Breakdown Structure

Contractor:	Fermi National Accelerator Laboratory			Contract Type/No:			Project Name/No:		Report Period:	
Location:	Batavia, Illinois						NuMI TEC		9/30/04	10/31/04
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work	Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling
1	109,168		0	0	0	109,168	0		0	0

WBS[2] / WBS[3] / Results...	Current Period					Cumulative to Date					At Completion		
	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance				
Item	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Budgeted	Latest Revised Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1.3.5 FY 02 Project Management													
Direct Cost + Escalation	0	0	0	0	0	533	533	253	0	281	533	533	0
Indirect Cost	0	0	0	0	0	170	170	72	0	98	170	170	0
WBS[3]Totals:	0	0	0	0	0	703	703	324	0	378	703	703	0
1.3.6 FY 03 Project Management													
Direct Cost + Escalation	0	0	0	0	0	411	411	324	0	87	411	411	0
Indirect Cost	0	0	0	0	0	131	131	98	0	33	131	131	0
WBS[3]Totals:	0	0	0	0	0	541	541	421	0	120	541	541	0
1.3.7 FY 04 Project Management													
Direct Cost + Escalation	0	0	0	0	(0)	45	45	332	0	(287)	45	45	0
Indirect Cost	0	0	0	0	(0)	14	14	99	0	(84)	14	14	0
WBS[3]Totals:	0	0	0	0	(0)	59	59	430	0	(371)	59	59	0
1.3.8 FY 05 Project Management													
Direct Cost + Escalation	4	4	20	0	(16)	4	4	20	0	(16)	23	23	0
Indirect Cost	1	1	6	0	(5)	1	1	6	0	(5)	7	7	0
WBS[3]Totals:	5	5	26	0	(21)	5	5	26	0	(21)	31	31	0
WBS[2]Totals:	5	5	27	0	(21)	3,405	3,406	3,091	0	315	3,431	3,431	0
General and Administrative	0	0	0	0	0	0	0	0	0	0	0	0	0
Undistributed Budget											0	0	0
Sub Total	308	266	458	(42)	(193)	106,856	106,849	106,857	(7)	(8)	107,361	107,361	0
Contingency											1,808	1,808	0
Total	308	266	458	(42)	(193)	106,856	106,849	106,857	(7)	(8)	109,168	109,168	0

NuMI Project TEC

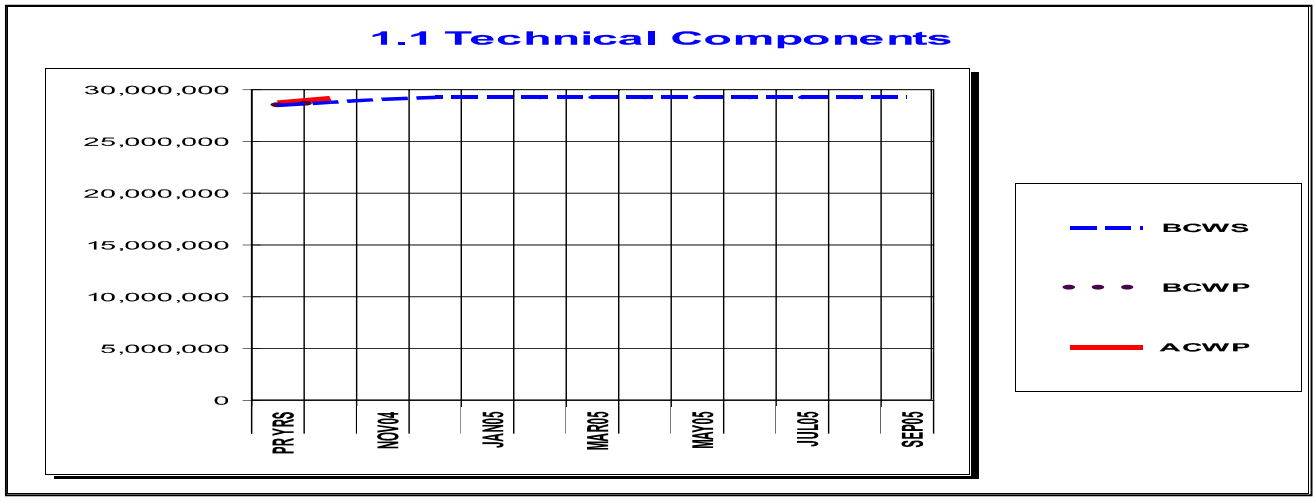
($000's Omitted)

Cost Performance Report - Baseline															
Contractor:	Fermi National Accelerator Laboratory			Contract Type/No:		Project Name/No:			Report Period:						
Location:	Batavia, Illinois					NuMI TEC			9/30/04				10/31/04		
(1) Original Contract Target Cost		(2) Negotiated Contract Changes		(3) Current Target Cost		(4) Est. Cost Authorized Authorized Unpriced Work			(5) Contract Budget Base (3) + (4)				(6) Total Allocated Budget		(7) Difference (5) - (6)
76,200		32,968		109,168		0			109,168				109,168		(0)
(8) Contract Start Date		(9) Contract Definitization Date				(10) Last Item Delivery Date			(11) Contract Completion Date				(12) Estimated Completion Date		
10/1/97		10/1/97				9/30/03			9/30/03				9/30/03		

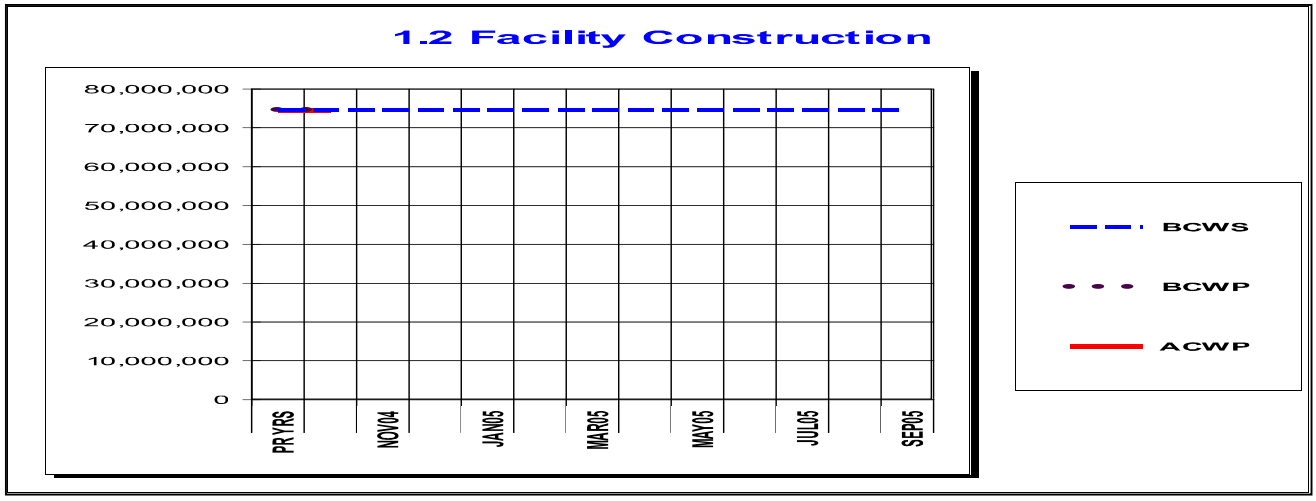
Item	BCWS Cum to Date	BCWS for Report Period	Budgeted Cost for Work Scheduled (Non-Cumulative)											Undist Budget	Total Budget
			Six Month Forecast						(Enter Specific Periods)						
			+1 NOV04	+2 DEC04	+3 JAN05	+4 FEB05	+5 MAR05	+6 APR05	BAL FY05						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
PM Baseline (Beginning of Period)	106,548	308	301	185	10	5	5	0	0	0	0	0	0	0	107,361
PM Baseline (End of Period)	106,856		301	185	10	5	5	0	0	0	0	0	0	0	107,361
Contingency															1,808
Total															109,168

NuMI Project TEC

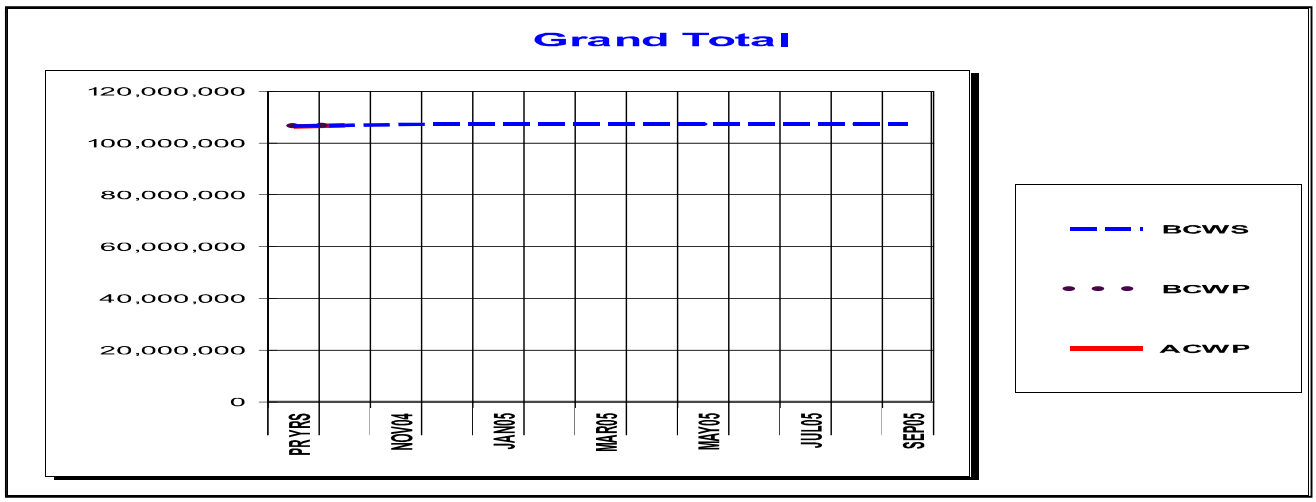
($000's Omitted)



	PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05
BCWS	28,495	28,798	29,093	29,273	29,277	29,277	29,277	29,277	29,277	29,277	29,277	29,277	29,277
BCWP	28,531	28,791											
ACWP	28,750	29,181											



	PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05
BCWS	74,652	74,652	74,652	74,652	74,652	74,652	74,652	74,652	74,652	74,652	74,652	74,652	74,652
BCWP	74,652	74,652											
ACWP	74,585	74,586											



	PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05
BCWS	106,548	106,856	107,156	107,341	107,351	107,355	107,361	107,361	107,361	107,361	107,361	107,361	107,361
BCWP	106,583	106,849											
ACWP	106,399	106,857											

NuMI Project TEC

($000's Omitted)

Program:	Description:	Approval:
NUMITEC	NuMI TEC	Program Manager
Run Date: 11/09/04	Status Date: 10/31/2004	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05	TOTAL
1.1 Technical Components															
1.1.1 Extraction & Primary Beam	BCWS	5,613	10	14	0	0	0	0	0	0	0	0	0	0	5,637
	ACWP	5,892	46	0	0	0	0	0	0	0	0	0	0	0	5,938
1.1.2 Neutrino Beam Devices	BCWS	11,132	104	71	30	0	0	0	0	0	0	0	0	0	11,338
	ACWP	11,012	221	0	0	0	0	0	0	0	0	0	0	0	11,233
1.1.3 Power Supply System	BCWS	5,321	15	8	1	0	0	0	0	0	0	0	0	0	5,345
	ACWP	5,343	77	0	0	0	0	0	0	0	0	0	0	0	5,420
1.1.4 Hadron Decay and Absorber	BCWS	1,360	64	118	43	0	0	0	0	0	0	0	0	0	1,584
	ACWP	1,554	12	0	0	0	0	0	0	0	0	0	0	0	1,566
1.1.5 Neutrino Beam Monitoring	BCWS	456	6	0	20	0	0	0	0	0	0	0	0	0	481
	ACWP	473	(1)	0	0	0	0	0	0	0	0	0	0	0	472
1.1.6 Alignment Systems	BCWS	289	6	6	0	0	0	0	0	0	0	0	0	0	301
	ACWP	202	0	0	0	0	0	0	0	0	0	0	0	0	202
1.1.7 Water, Vacuum & Gas Systems	BCWS	2,036	31	18	0	0	0	0	0	0	0	0	0	0	2,085
	ACWP	2,111	41	0	0	0	0	0	0	0	0	0	0	0	2,152
1.1.8 Installation and Integration	BCWS	2,227	66	61	86	5	0	0	0	0	0	0	0	0	2,445
	ACWP	2,100	35	0	0	0	0	0	0	0	0	0	0	0	2,135
1.1.9 Hadronic Hose (Close-out)	BCWS	62	0	0	0	0	0	0	0	0	0	0	0	0	62
	ACWP	63	0	0	0	0	0	0	0	0	0	0	0	0	63
WBS[2] Totals:	BCWS	28,495	303	295	179	5	0	0	0	0	0	0	0	0	29,277
	ACWP	28,750	431	0	0	0	0	0	0	0	0	0	0	0	29,181
1.2 Facility Construction															
1.2.1 Facility Physics Design Phase	BCWS	70	0	0	0	0	0	0	0	0	0	0	0	0	70
	ACWP	70	0	0	0	0	0	0	0	0	0	0	0	0	70
1.2.2 Facility Construction Title I Design Phase	BCWS	1,438	0	0	0	0	0	0	0	0	0	0	0	0	1,438
	ACWP	1,437	0	0	0	0	0	0	0	0	0	0	0	0	1,437
1.2.3 Facility Construction Title II Design Phase	BCWS	2,975	0	0	0	0	0	0	0	0	0	0	0	0	2,975
	ACWP	2,974	0	0	0	0	0	0	0	0	0	0	0	0	2,974
1.2.4 Facility Construction Phase	BCWS	70,169	0	0	0	0	0	0	0	0	0	0	0	0	70,169
	ACWP	70,104	1	0	0	0	0	0	0	0	0	0	0	0	70,105
WBS[2] Totals:	BCWS	74,652	0	0	0	0	0	0	0	0	0	0	0	0	74,652
	ACWP	74,585	1	0	0	0	0	0	0	0	0	0	0	0	74,586
1.3 Project Management															
1.3.1 FY 98 Project Management	BCWS	275	0	0	0	0	0	0	0	0	0	0	0	0	275
	ACWP	141	0	0	0	0	0	0	0	0	0	0	0	0	141
1.3.2 FY 99 Project Management	BCWS	560	0	0	0	0	0	0	0	0	0	0	0	0	560
	ACWP	661	0	0	0	0	0	0	0	0	0	0	0	0	661
1.3.3 FY 00 Project Management	BCWS	575	0	0	0	0	0	0	0	0	0	0	0	0	575
	ACWP	663	0	0	0	0	0	0	0	0	0	0	0	0	663
1.3.4 FY 01 Project Management	BCWS	688	0	0	0	0	0	0	0	0	0	0	0	0	688
	ACWP	423	0	0	0	0	0	0	0	0	0	0	0	0	423
1.3.5 FY 02 Project Management	BCWS	703	0	0	0	0	0	0	0	0	0	0	0	0	703
	ACWP	324	0	0	0	0	0	0	0	0	0	0	0	0	324

NuMI Project TEC

($000's Omitted)

Program:	Description:	Approval:
NUMITEC	NuMI TEC	Program Manager
Run Date: 11/09/04	Status Date: 10/31/2004	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05	TOTAL
1.3.6 FY 03 Project Management	BCWS	541	0	0	0	0	0	0	0	0	0	0	0	0	541
	ACWP	421	0	0	0	0	0	0	0	0	0	0	0	0	421
1.3.7 FY 04 Project Management	BCWS	59	0	0	0	0	0	0	0	0	0	0	0	0	59
	ACWP	430	0	0	0	0	0	0	0	0	0	0	0	0	430
1.3.8 FY 05 Project Management	BCWS	0	5	5	5	5	5	5	0	0	0	0	0	0	31
	ACWP	0	26	0	0	0	0	0	0	0	0	0	0	0	26
WBS[2] Totals:	BCWS	3,401	5	5	5	5	5	5	0	0	0	0	0	0	3,431
	ACWP	3,064	27	0	0	0	0	0	0	0	0	0	0	0	3,091
Grand Totals:	BCWS	106,548	308	301	185	10	5	5	0	0	0	0	0	0	107,361
	ACWP	106,399	458	0	0	0	0	0	0	0	0	0	0	0	106,857

NuMI Project TEC - Labor Only

($000's Omitted)

Program:	Description:	Approval:
NUMITEC	NuMI TEC	Program Manager
Run Date: 11/09/04	Status Date: 10/31/2004	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05	TOTAL
1.1 Technical Components															
1.1.1 Extraction & Primary Beam	BCWS	2,416	10	14	0	0	0	0	0	0	0	0	0	0	2,440
	ACWP	3,195	22	0	0	0	0	0	0	0	0	0	0	0	3,217
1.1.2 Neutrino Beam Devices	BCWS	5,671	40	54	21	0	0	0	0	0	0	0	0	0	5,786
	ACWP	5,740	20	0	0	0	0	0	0	0	0	0	0	0	5,760
1.1.3 Power Supply System	BCWS	2,785	15	8	1	0	0	0	0	0	0	0	0	0	2,808
	ACWP	3,286	50	0	0	0	0	0	0	0	0	0	0	0	3,336
1.1.4 Hadron Decay and Absorber	BCWS	585	14	26	22	0	0	0	0	0	0	0	0	0	647
	ACWP	730	2	0	0	0	0	0	0	0	0	0	0	0	732
1.1.5 Neutrino Beam Monitoring	BCWS	78	0	0	0	0	0	0	0	0	0	0	0	0	78
	ACWP	75	0	0	0	0	0	0	0	0	0	0	0	0	75
1.1.6 Alignment Systems	BCWS	236	3	2	0	0	0	0	0	0	0	0	0	0	241
	ACWP	148	0	0	0	0	0	0	0	0	0	0	0	0	148
1.1.7 Water, Vacuum & Gas Systems	BCWS	1,102	31	18	0	0	0	0	0	0	0	0	0	0	1,151
	ACWP	918	7	0	0	0	0	0	0	0	0	0	0	0	925
1.1.8 Installation and Integration	BCWS	958	46	46	34	5	0	0	0	0	0	0	0	0	1,088
	ACWP	447	0	0	0	0	0	0	0	0	0	0	0	0	447
1.1.9 Hadronic Hose (Close-out)	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	13,830	158	169	78	5	0	0	0	0	0	0	0	0	14,239
	ACWP	14,539	101	0	0	0	0	0	0	0	0	0	0	0	14,640
1.2 Facility Construction															
1.2.1 Facility Physics Design Phase	BCWS	70	0	0	0	0	0	0	0	0	0	0	0	0	70
	ACWP	70	0	0	0	0	0	0	0	0	0	0	0	0	70
1.2.2 Facility Construction Title I Design Phase	BCWS	300	0	0	0	0	0	0	0	0	0	0	0	0	300
	ACWP	299	0	0	0	0	0	0	0	0	0	0	0	0	299
1.2.3 Facility Construction Title II Design Phase	BCWS	556	0	0	0	0	0	0	0	0	0	0	0	0	556
	ACWP	556	0	0	0	0	0	0	0	0	0	0	0	0	556
1.2.4 Facility Construction Phase	BCWS	3,071	0	0	0	0	0	0	0	0	0	0	0	0	3,071
	ACWP	3,389	0	0	0	0	0	0	0	0	0	0	0	0	3,389
WBS[2] Totals:	BCWS	3,998	0	0	0	0	0	0	0	0	0	0	0	0	3,998
	ACWP	4,314	0	0	0	0	0	0	0	0	0	0	0	0	4,314
1.3 Project Management															
1.3.1 FY 98 Project Management	BCWS	275	0	0	0	0	0	0	0	0	0	0	0	0	275
	ACWP	125	0	0	0	0	0	0	0	0	0	0	0	0	125
1.3.2 FY 99 Project Management	BCWS	560	0	0	0	0	0	0	0	0	0	0	0	0	560
	ACWP	595	0	0	0	0	0	0	0	0	0	0	0	0	595
1.3.3 FY 00 Project Management	BCWS	575	0	0	0	0	0	0	0	0	0	0	0	0	575
	ACWP	616	0	0	0	0	0	0	0	0	0	0	0	0	616
1.3.4 FY 01 Project Management	BCWS	688	0	0	0	0	0	0	0	0	0	0	0	0	688
	ACWP	416	0	0	0	0	0	0	0	0	0	0	0	0	416

NuMI Project TEC - Labor Only

($000's Omitted)

Program:	Description:	Approval:
NUMITEC	NuMI TEC	Program Manager
Run Date: 11/09/04	Status Date: 10/31/2004	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05	TOTAL
1.3.5 FY 02 Project Management	BCWS	703	0	0	0	0	0	0	0	0	0	0	0	0	703
	ACWP	324	0	0	0	0	0	0	0	0	0	0	0	0	324
1.3.6 FY 03 Project Management	BCWS	541	0	0	0	0	0	0	0	0	0	0	0	0	541
	ACWP	416	0	0	0	0	0	0	0	0	0	0	0	0	416
1.3.7 FY 04 Project Management	BCWS	59	0	0	0	0	0	0	0	0	0	0	0	0	59
	ACWP	428	0	0	0	0	0	0	0	0	0	0	0	0	428
1.3.8 FY 05 Project Management	BCWS	0	5	5	5	5	5	5	0	0	0	0	0	0	31
	ACWP	0	26	0	0	0	0	0	0	0	0	0	0	0	26
WBS[2] Totals:	BCWS	3,401	5	5	5	5	5	5	0	0	0	0	0	0	3,431
	ACWP	2,921	26	0	0	0	0	0	0	0	0	0	0	0	2,947
Grand Totals:	BCWS	21,228	163	174	83	10	5	5	0	0	0	0	0	0	21,668
	ACWP	21,773	128	0	0	0	0	0	0	0	0	0	0	0	21,901

NuMI Other Project Costs

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor:	Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:			
Location:	Batavia							NuMI Other Proj Costs		9/30/04		10/31/04	
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling		
1	62,200		0		0	0	62,200	0		0	0		
WBS[2]	Current Period					Cumulative to Date					At Completion		
WBS[3] Results...	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance			Latest	
Item	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Budgeted	Revised Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2.1 Magnets: Steel & Coils													
2.1.1 Steel Plane Fabrication													
Direct Cost + Escalation	0	0	0	0	0	4,372	4,372	4,375	0	(3)	4,372	4,372	0
Indirect Cost	0	0	0	0	0	229	229	226	0	3	229	229	0
WBS[3]Totals:	0	0	0	0	0	4,601	4,601	4,601	0	(0)	4,601	4,601	0
2.1.2 Steel handling fixtures													
Direct Cost + Escalation	0	0	0	0	0	637	637	637	(0)	0	637	637	0
Indirect Cost	0	0	0	0	0	156	156	157	0	(0)	156	156	0
WBS[3]Totals:	0	0	0	0	0	793	793	793	0	(0)	793	793	0
2.1.3 Near Detector Support Structures													
Direct Cost + Escalation	0	0	0	0	0	(2)	(2)	1	0	(4)	(2)	(2)	0
Indirect Cost	0	0	0	0	0	4	4	0	0	4	4	4	0
WBS[3]Totals:	0	0	0	0	0	1	1	1	0	0	1	1	0
2.1.4 Magnet Coil													
Direct Cost + Escalation	0	0	0	0	0	1,386	1,386	1,373	(0)	14	1,386	1,386	0
Indirect Cost	0	0	0	0	0	286	286	300	0	(14)	286	286	0
WBS[3]Totals:	0	0	0	0	0	1,673	1,673	1,672	0	0	1,673	1,673	0
2.1.5 Detector Plane Prototypes													
Direct Cost + Escalation	0	0	0	0	0	390	390	394	0	(4)	390	390	0
Indirect Cost	0	0	0	0	0	106	106	102	(0)	4	106	106	0
WBS[3]Totals:	0	0	0	0	0	495	495	496	(0)	(0)	495	495	0
2.1.6 Steel Management													
Direct Cost + Escalation	0	0	0	0	0	53	53	53	0	(0)	53	53	0
Indirect Cost	0	0	0	0	0	4	4	5	(0)	(0)	4	4	0
WBS[3]Totals:	0	0	0	0	0	57	57	58	(0)	(0)	57	57	0
WBS[2]Totals:	0	0	0	0	0	7,621	7,621	7,622	0	(1)	7,621	7,621	0
2.2 Scintillator Detector Fabrication													
2.2.1 Scintillator Strips													
Direct Cost + Escalation	0	0	0	0	0	2,890	2,890	2,867	0	22	2,890	2,890	0
Indirect Cost	0	0	0	0	0	266	266	289	(0)	(23)	266	266	0
WBS[3]Totals:	0	0	0	0	0	3,156	3,156	3,156	0	(0)	3,156	3,156	0
2.2.2 Fiber													
Direct Cost + Escalation	0	0	0	0	0	4,236	4,236	4,270	0	(34)	4,236	4,236	0
Indirect Cost	0	0	0	0	0	60	60	26	(0)	34	60	60	0
WBS[3]Totals:	0	0	0	0	0	4,296	4,296	4,296	(0)	(0)	4,296	4,296	0

NuMI Other Project Costs

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor:	Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:			
Location:	Batavia							NuMI Other Proj Costs		9/30/04		10/31/04	
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling		
1	62,200		0		0	0	62,200	0		0	0		
WBS[2]	Current Period					Cumulative to Date					At Completion		
WBS[3]	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance			Latest	
Results...	Work	Work	Work			Work	Work	Work				Revised	
Item	Scheduled	Performed	Performed	Schedule	Cost	Scheduled	Performed	Performed	Schedule	Cost	Budgeted	Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2.2.3 Scintillator Modules													
Direct Cost + Escalation	0	0	0	0	0	1,899	1,899	1,896	0	3	1,899	1,899	0
Indirect Cost	0	0	0	0	0	83	83	89	0	(6)	83	83	0
WBS[3]Totals:	0	0	0	0	0	1,982	1,982	1,985	0	(3)	1,982	1,982	0
2.2.4 Photodetector Systems													
Direct Cost + Escalation	0	0	0	0	0	2,156	2,156	2,170	0	(14)	2,156	2,156	0
Indirect Cost	0	0	0	0	0	23	23	9	0	14	23	23	0
WBS[3]Totals:	0	0	0	0	0	2,179	2,179	2,179	0	(0)	2,179	2,179	0
2.2.5 Mux Boxes & Connectors													
Direct Cost + Escalation	0	0	0	0	0	1,394	1,394	1,397	(0)	(4)	1,394	1,394	0
Indirect Cost	0	0	0	0	0	27	27	23	(0)	4	27	27	0
WBS[3]Totals:	0	0	0	0	0	1,421	1,421	1,421	(0)	0	1,421	1,421	0
2.2.6 Calibration Systems													
Direct Cost + Escalation	0	0	0	0	0	1,102	1,102	1,103	0	(0)	1,102	1,102	0
Indirect Cost	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[3]Totals:	0	0	0	0	0	1,103	1,103	1,103	0	0	1,103	1,103	0
2.2.7 Ass'y & Test Equipment													
Direct Cost + Escalation	0	0	0	0	0	1,677	1,677	1,677	(0)	(0)	1,677	1,677	0
Indirect Cost	0	0	0	0	0	53	53	53	(0)	(0)	53	53	0
WBS[3]Totals:	0	0	0	0	0	1,731	1,731	1,731	(0)	(0)	1,731	1,731	0
2.2.8 Factories													
Direct Cost + Escalation	0	0	0	0	0	3,232	3,232	3,266	0	(35)	3,232	3,232	0
Indirect Cost	0	0	0	0	0	47	47	4	0	43	47	47	0
WBS[3]Totals:	0	0	0	0	0	3,279	3,279	3,271	0	8	3,279	3,279	0
2.2.9 Scintillator Management													
Direct Cost + Escalation	0	0	0	0	0	371	371	375	(0)	(4)	371	371	0
Indirect Cost	0	0	0	0	0	9	9	5	0	4	9	9	0
WBS[3]Totals:	0	0	0	0	0	379	379	379	(0)	(0)	379	379	0
WBS[2]Totals:	0	0	0	0	0	19,525	19,525	19,520	0	5	19,525	19,525	0
2.3 Electronics, DAQ & Database													
2.3.1 Near Detector Front End													
Direct Cost + Escalation	4	0	1	(4)	(1)	4,150	4,151	4,070	1	81	4,151	4,151	0
Indirect Cost	0	0	0	(0)	(0)	450	450	511	0	(61)	450	450	0
WBS[3]Totals:	4	0	1	(4)	(1)	4,600	4,601	4,581	1	20	4,601	4,601	0
2.3.2 Far Detector Front-end													
Direct Cost + Escalation	0	0	0	0	0	1,590	1,590	1,593	0	(2)	1,590	1,590	0
Indirect Cost	0	0	0	0	0	82	82	79	0	3	82	82	0
WBS[3]Totals:	0	0	0	0	0	1,673	1,673	1,672	0	1	1,673	1,673	0

NuMI Other Project Costs

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor: Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:				
Location: Batavia							NuMI Other Proj Costs		9/30/04	10/31/04			
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work	Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling			
1	62,200		0	0	0	62,200	0		0	0			
WBS[2]	Current Period					Cumulative to Date					At Completion		
WBS[3]	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance				
Results...	Work	Work	Work			Work	Work	Work				Latest Revised	
Item	Scheduled	Performed	Performed	Schedule	Cost	Scheduled	Performed	Performed	Schedule	Cost	Budgeted	Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2.3.3 Data Routing & Trigger Farm													
Direct Cost + Escalation	0	0	0	0	0	1,241	1,241	1,241	(0)	0	1,241	1,241	0
WBS[3]Totals:	0	0	0	0	0	1,241	1,241	1,241	(0)	0	1,241	1,241	0
2.3.4 Data Acquisition & Triggering													
Direct Cost + Escalation	0	0	0	0	0	391	391	391	0	0	391	391	0
WBS[3]Totals:	0	0	0	0	0	391	391	391	0	0	391	391	0
2.3.5 Database													
Direct Cost + Escalation	0	0	0	0	0	10	10	10	0	(0)	10	10	0
Indirect Cost	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[3]Totals:	0	0	0	0	0	10	10	10	0	(0)	10	10	0
2.3.6 Auxilliary Systems													
Direct Cost + Escalation	0	0	0	0	0	495	495	494	0	1	495	495	0
Indirect Cost	0	0	0	0	0	48	48	50	0	(2)	48	48	0
WBS[3]Totals:	0	0	0	0	0	543	543	544	0	(1)	543	543	0
2.3.7 Electronics Management													
Direct Cost + Escalation	0	0	0	0	0	214	214	217	0	(3)	214	214	0
Indirect Cost	0	0	0	0	0	3	3	1	0	2	3	3	0
WBS[3]Totals:	0	0	0	0	0	218	218	218	0	(0)	218	218	0
2.3.8 Slow Control & Monitoring													
Direct Cost + Escalation	0	0	0	0	0	407	407	386	0	21	407	407	0
Indirect Cost	0	0	0	0	0	12	12	14	(0)	(2)	12	12	0
WBS[3]Totals:	0	0	0	0	0	419	419	400	0	19	419	419	0
2.3.9 HV System													
Direct Cost + Escalation	0	0	0	0	0	67	67	66	(0)	0	67	67	0
Indirect Cost	0	0	0	0	0	10	10	11	0	(0)	10	10	0
WBS[3]Totals:	0	0	0	0	0	77	77	77	(0)	0	77	77	0
WBS[2]Totals:	4	0	1	(4)	(1)	9,172	9,173	9,134	1	39	9,173	9,173	0
2.4 Far Detector Installation													
2.4.1 FDI Completed Design Tasks													
Direct Cost + Escalation	0	0	0	0	0	0	0	0	0	0	0	0	0
Indirect Cost	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[3]Totals:	0	0	0	0	0	0	0	0	0	0	0	0	0
2.4.2 FDI Management													
Direct Cost + Escalation	0	0	0	0	0	541	541	550	0	(9)	541	541	0
Indirect Cost	0	0	0	0	0	43	43	34	(0)	9	43	43	0
WBS[3]Totals:	0	0	0	0	0	584	584	584	0	(0)	584	584	0

NuMI Other Project Costs

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor:	Fermi National Accelerator Laboratory			Contract Type/No:			Project Name/No:		Report Period:				
Location:	Batavia						NuMI Other Proj Costs		9/30/04	10/31/04			
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work	Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling			
1	62,200		0	0	0	62,200	0		0	0			
WBS[2]	Current Period					Cumulative to Date					At Completion		
WBS[3]	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance				
Results...	Work	Work	Work			Work	Work	Work				Latest Revised	
Item	Scheduled	Performed	Performed	Schedule	Cost	Scheduled	Performed	Performed	Schedule	Cost	Budgeted	Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2.4.3 SDN-FDI Construction Oversight													
Direct Cost + Escalation	0	0	0	0	0	115	115	115	0	0	115	115	0
WBS[3]Totals:	0	0	0	0	0	115	115	115	0	0	115	115	0
2.4.4 FDI Soudan Lab Infrastructure Setup													
Direct Cost + Escalation	0	0	0	0	0	470	470	469	0	1	470	470	0
Indirect Cost	0	0	0	0	0	3	3	4	0	(0)	3	3	0
WBS[3]Totals:	0	0	0	0	0	473	473	473	0	0	473	473	0
2.4.5 SDN-FDI Detector Installation													
Direct Cost + Escalation	0	0	0	0	0	2,960	2,960	2,953	0	7	2,960	2,960	0
Indirect Cost	0	0	0	0	0	0	0	6	0	(6)	0	0	0
WBS[3]Totals:	0	0	0	0	0	2,960	2,960	2,959	0	0	2,960	2,960	0
2.4.6 SDN-FDI DNR Costs													
Direct Cost + Escalation	0	0	0	0	0	382	382	378	0	4	382	382	0
Indirect Cost	0	0	0	0	0	0	0	1	0	(1)	0	0	0
WBS[3]Totals:	0	0	0	0	0	382	382	378	0	3	382	382	0
2.4.7 FDI Alignment & Survey													
Direct Cost + Escalation	0	0	0	0	0	58	58	58	0	(1)	58	58	0
Indirect Cost	0	0	0	0	0	10	10	9	0	0	10	10	0
WBS[3]Totals:	0	0	0	0	0	67	67	67	0	(0)	67	67	0
WBS[2]Totals:	0	0	0	0	0	4,581	4,581	4,577	0	4	4,581	4,581	0
2.5 Near Detector Installation													
2.5.1 NDI Infrastructure													
Direct Cost + Escalation	0	29	15	29	14	402	402	374	0	28	402	402	0
Indirect Cost	0	9	2	9	7	110	110	75	(0)	35	110	110	0
WBS[3]Totals:	0	39	18	39	21	512	512	449	(0)	63	512	512	0
2.5.2 NDI Plane Assembly													
Direct Cost + Escalation	0	0	0	0	0	393	393	403	0	(10)	393	393	0
Indirect Cost	0	0	0	0	0	123	123	111	(0)	12	123	123	0
WBS[3]Totals:	0	0	0	0	0	516	516	514	0	2	516	516	0
2.5.3 NDI Detector Installation													
Direct Cost + Escalation	42	9	56	(33)	(47)	887	869	995	(18)	(126)	898	898	0
Indirect Cost	11	1	14	(10)	(13)	253	247	239	(6)	8	254	254	0
WBS[3]Totals:	53	10	69	(43)	(60)	1,140	1,116	1,234	(24)	(118)	1,151	1,151	0
2.5.4 NDI Facility Experimental Infrastructure													
Direct Cost + Escalation	0	0	2	0	(2)	200	200	208	0	(7)	200	200	0
Indirect Cost	0	0	0	0	(0)	38	38	36	0	2	38	38	0
WBS[3]Totals:	0	0	2	0	(2)	238	238	243	0	(6)	238	238	0

NuMI Other Project Costs

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor:	Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:			
Location:	Batavia							NuMI Other Proj Costs		9/30/04	10/31/04		
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling		
1	62,200		0		0	0	62,200	0		0	0		
WBS[2]	Current Period					Cumulative to Date					At Completion		
WBS[3]	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance			Latest	
Results...	Work	Work	Work			Work	Work	Work				Revised	
Item	Scheduled	Performed	Performed	Schedule	Cost	Scheduled	Performed	Performed	Schedule	Cost	Budgeted	Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2.5.5 RBI SB&O Experimental Systems Outfitting													
Direct Cost + Escalation	0	0	0	0	0	2,944	2,944	2,944	0	(0)	2,944	2,944	0
WBS[3]Totals:	0	0	0	0	0	2,944	2,944	2,944	0	(0)	2,944	2,944	0
WBS[2]Totals:	53	48	89	(5)	(41)	5,350	5,326	5,384	(24)	(58)	5,361	5,361	0
2.6 MINOS Project Management													
2.6.1 FNL-Project Management													
Direct Cost + Escalation	15	16	28	1	(12)	1,192	1,193	1,249	1	(56)	1,241	1,241	0
Indirect Cost	5	5	8	0	(3)	373	373	346	0	27	388	388	0
WBS[3]Totals:	20	21	36	1	(15)	1,565	1,566	1,595	1	(29)	1,629	1,629	0
2.6.2 ANL-Project Management													
Direct Cost + Escalation	0	0	0	0	0	96	96	96	0	(0)	96	96	0
Indirect Cost	0	0	0	0	0	1	1	1	0	0	1	1	0
WBS[3]Totals:	0	0	0	0	0	98	98	98	0	(0)	98	98	0
WBS[2]Totals:	20	21	36	1	(15)	1,663	1,664	1,693	1	(29)	1,727	1,727	0
3.1 NuMI Conceptual Design													
3.1.1 FNL-BD-NuMI CDR													
Direct Cost + Escalation	0	0	0	0	0	407	407	407	0	0	407	407	0
Indirect Cost	0	0	0	0	0	82	82	80	0	2	82	82	0
WBS[3]Totals:	0	0	0	0	0	489	489	487	0	2	489	489	0
3.1.2 FNL-BD-NuMI FESS CDR													
Direct Cost + Escalation	0	0	0	0	0	282	282	282	0	0	282	282	0
Indirect Cost	0	0	0	0	0	64	64	64	0	0	64	64	0
WBS[3]Totals:	0	0	0	0	0	346	346	346	0	0	346	346	0
3.1.3 FNL-NuMI Beam Design													
Direct Cost + Escalation	0	0	0	0	0	612	612	612	0	(0)	612	612	0
Indirect Cost	0	0	0	0	0	186	186	184	0	3	186	186	0
WBS[3]Totals:	0	0	0	0	0	798	798	796	0	3	798	798	0
3.1.4 FNL-BD-NuMI Project Management													
Direct Cost + Escalation	0	0	0	0	0	184	184	184	0	(0)	184	184	0
Indirect Cost	0	0	0	0	0	51	51	50	0	1	51	51	0
WBS[3]Totals:	0	0	0	0	0	235	235	234	0	1	235	235	0
3.1.5 FNL-Soudan Lab Design													
Direct Cost + Escalation	0	0	0	0	0	55	55	56	0	(1)	55	55	0
Indirect Cost	0	0	0	0	0	10	10	9	0	1	10	10	0
WBS[3]Totals:	0	0	0	0	0	65	65	65	0	0	65	65	0
WBS[2]Totals:	0	0	0	0	0	1,934	1,934	1,928	0	6	1,934	1,934	0

NuMI Other Project Costs

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor: Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:				
Location: Batavia							NuMI Other Proj Costs		9/30/04	10/31/04			
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work	Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling			
1	62,200		0	0	0	62,200	0		0	0			
WBS[2]	Current Period					Cumulative to Date					At Completion		
WBS[3]	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance				
Results...	Work	Work	Work			Work	Work	Work				Latest Revised	
Item	Scheduled	Performed	Performed	Schedule	Cost	Scheduled	Performed	Performed	Schedule	Cost	Budgeted	Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
3.2 MINOS Detector R&D													
3.2.1 FNL-MINOS Scintillator R&D													
Direct Cost + Escalation	0	0	0	0	0	872	872	870	0	2	872	872	0
Indirect Cost	0	0	0	0	0	115	115	118	0	(2)	115	115	0
WBS[3]Totals:	0	0	0	0	0	988	988	988	0	0	988	988	0
3.2.2 FNL-MINOS Steel R&D													
Direct Cost + Escalation	0	0	0	0	0	549	549	550	0	(1)	549	549	0
Indirect Cost	0	0	0	0	0	95	95	94	0	1	95	95	0
WBS[3]Totals:	0	0	0	0	0	644	644	644	0	(0)	644	644	0
3.2.3 FNL-RD-Neutrino Oscillation R&D													
Direct Cost + Escalation	0	0	0	0	0	116	116	116	0	0	116	116	0
Indirect Cost	0	0	0	0	0	20	20	20	(0)	0	20	20	0
WBS[3]Totals:	0	0	0	0	0	136	136	136	(0)	0	136	136	0
WBS[2]Totals:	0	0	0	0	0	1,768	1,768	1,768	(0)	0	1,768	1,768	0
3.3 MINOS Cavern													
3.3.0 Preconstruction Work													
Direct Cost + Escalation	0	0	0	0	0	758	758	758	0	0	758	758	0
WBS[3]Totals:	0	0	0	0	0	758	758	758	0	0	758	758	0
3.3.1 Cavern Construction													
Direct Cost + Escalation	0	0	0	0	0	6,597	6,597	6,597	0	0	6,597	6,597	0
WBS[3]Totals:	0	0	0	0	0	6,597	6,597	6,597	0	0	6,597	6,597	0
3.3.2 Cavern Outfitting													
Direct Cost + Escalation	0	0	0	0	0	7,171	7,171	7,171	0	0	7,171	7,171	0
WBS[3]Totals:	0	0	0	0	0	7,171	7,171	7,171	0	0	7,171	7,171	0
WBS[2]Totals:	0	0	0	0	0	14,527	14,527	14,527	0	0	14,527	14,527	0
3.4 Soudan/MINOS Operating													
3.4.1 UMN-Mine Crew Support/Soudan Gen'l Operations													
Direct Cost + Escalation	0	0	0	0	0	1,523	1,523	1,503	0	20	1,523	1,523	0
Indirect Cost	0	0	0	0	0	8	8	27	0	(20)	8	8	0
WBS[3]Totals:	0	0	0	0	0	1,531	1,531	1,531	0	(0)	1,531	1,531	0
3.4.2 UMN-Breitung Township Building Rental													
Direct Cost + Escalation	0	0	0	0	0	75	75	75	0	(0)	75	75	0
WBS[3]Totals:	0	0	0	0	0	75	75	75	0	(0)	75	75	0
3.4.3 UMN-E Peterson Salary													
Direct Cost + Escalation	0	0	0	0	0	71	71	71	0	0	71	71	0
WBS[3]Totals:	0	0	0	0	0	71	71	71	0	0	71	71	0
WBS[2]Totals:	0	0	0	0	0	1,677	1,677	1,677	0	(0)	1,677	1,677	0

NuMI Other Project Costs

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor:	Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:			
Location:	Batavia							NuMI Other Proj Costs		9/30/04		10/31/04	
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling		
1	62,200		0		0	0	62,200	0		0	0		
WBS[2]	Current Period					Cumulative to Date					At Completion		
WBS[3]	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance			Latest	
Results...	Work	Work	Work			Work	Work	Work				Revised	
Item	Scheduled	Performed	Performed	Schedule	Cost	Scheduled	Performed	Performed	Schedule	Cost	Budgeted	Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
General and Administrative	0	0	0	0	0	0	0	0	0	0	0	0	0
Undistributed Budget											0	0	0
Sub Total	78	69	127	(8)	(57)	67,818	67,796	67,830	(22)	(34)	67,894	67,894	0
Contingency + MINOS Scope Reserve											2,899	2,899	0
Total NuMI Other Proj Costs	78	69	127	(8)	(57)	67,818	67,796	67,830	(22)	(34)	70,793	70,793	0
UK In-Kind Contribution	0	0	0	0	0	(4,835)	(4,835)	(4,835)	(0)	0	(4,835)	(4,835)	0
Minnesota Preconstruction Funds	0	0	0	0	0	(758)	(758)	(758)	0	0	(758)	(758)	0
Minnesota Construction Funds FY99	0	0	0	0	0	(3,000)	(3,000)	(3,000)	0	0	(3,000)	(3,000)	0
Total US Funds	78	69	127	(8)	(57)	59,225	59,203	59,237	(22)	(34)	62,200	62,200	0
WBS[2}Totals:													
Direct Cost + Escalation	62	54	102	(8)	(48)	44,998	44,981	45,114	(17)	(134)	45,057	45,057	0
Indirect Cost	16	15	25	(1)	(10)	2,915	2,909	2,815	(6)	94	2,931	2,931	0
Subtotal	78	69	127	(8)	(57)	47,912	47,890	47,930	(22)	(40)	47,988	47,988	0
UK In-Kind Contribution	0	0	0	0	0	(4,835)	(4,835)	(4,835)	(0)	0	(4,835)	(4,835)	0
Total MINOS Detector	78	69	127	(8)	(57)	43,078	43,055	43,095	(22)	(40)	43,153	43,153	0
Direct Cost + Escalation	0	0	0	0	0	19,273	19,273	19,253	0	20	19,273	19,273	0
Indirect Cost	0	0	0	0	0	633	633	646	0	(14)	633	633	0
Subtotal	0	0	0	0	0	19,906	19,906	19,900	0	6	19,906	19,906	0
Minnesota Preconstruction Funds	0	0	0	0	0	(758)	(758)	(758)	0	0	(758)	(758)	0
Minnesota Construction Funds FY99	0	0	0	0	0	(3,000)	(3,000)	(3,000)	0	0	(3,000)	(3,000)	0
Total Project Support	0	0	0	0	0	16,148	16,148	16,142	0	6	16,148	16,148	0
Contingency + MINOS Scope Reserve											2,899	2,899	0
Total US Funds	78	69	127	(8)	(57)	59,225	59,203	59,237	(22)	(34)	62,200	62,200	0

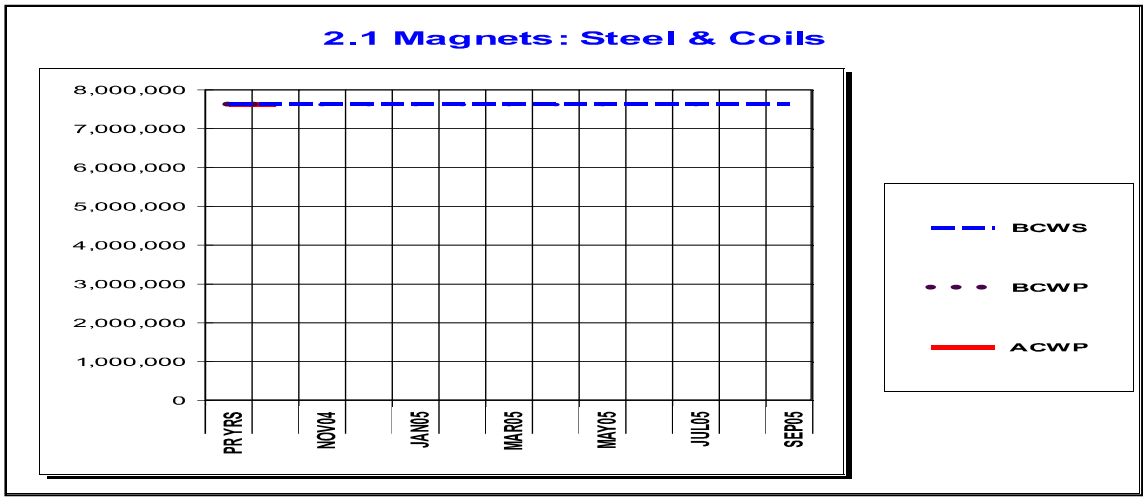
NuMI Other Project Costs

($000's Omitted)

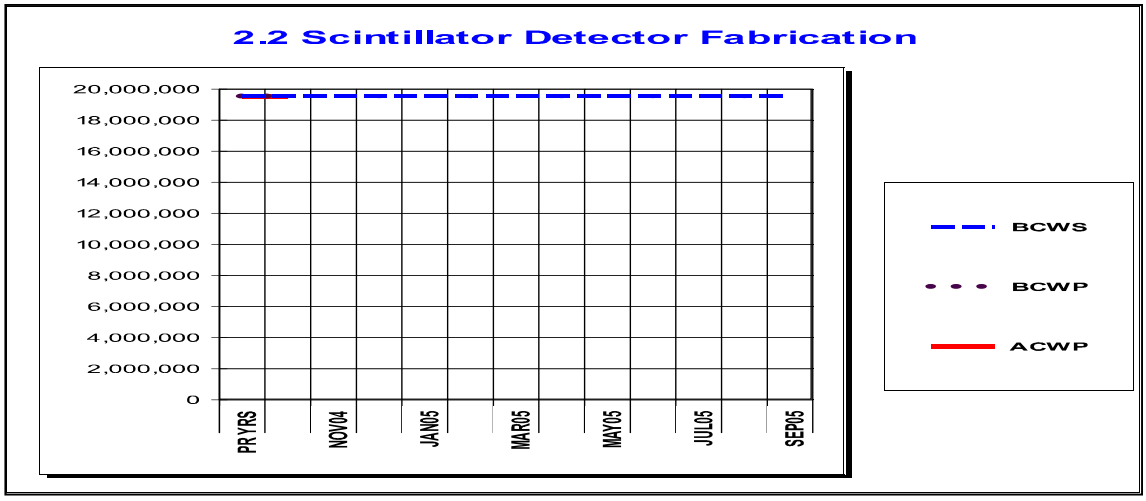
Cost Performance Report - Baseline															
Contractor:	Fermi National Accelerator Laboratory			Contract Type/No:		Project Name/No:			Report Period:						
Location:	Batavia, Illinois					NuMI Other Proj Costs			9/30/04				10/31/04		
(1) Original Contract Target Cost		(2) Negotiated Contract Changes		(3) Current Target Cost		(4) Est. Cost Authorized Authorized Unpriced Work			(5) Contract Budget Base (3) + (4)			(6) Total Allocated Budget		(7) Difference (5) - (6)	
62,200		0		62,200		0			62,200			62,200		0	
(8) Contract Start Date 10/1/97		(9)Contract Definitization Date 10/1/97				(10) Last Item Delivery Date 4/30/04			(11) Contract Completion Date 4/30/04			(12) Estimated Completion Date 4/30/04			
Item	BCWS Cum to Date	BCWS for Report Period	Budgeted Cost for Work Scheduled (Non-Cumulative) Six Month Forecast +1 NOV04	+2 DEC04	+3 JAN05	+4 FEB05	+5 MAR05	+6 APR05	(Enter Specific Periods) BAL FY05					Undist Budget	Total Budget
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
PM Baseline (Beginning of Period)	67,740	78	32	24	20	0	0	0	0	0	0	0	0	0	67,894
PM Baseline (End of Period)	67,818		32	24	20	0	0	0	0	0	0	0	0	0	67,894
Contingency + MINOS Scope Reserve															2,899
Total NuMI Other Project Costs															70,793
UK In-Kind Contribution															(4,835)
Minnesota Preconstruction Funds															(758)
Minnesota Preconstruciton Funds FY99															(3,000)
Total US Funds															62,200

NuMI Other Project Costs

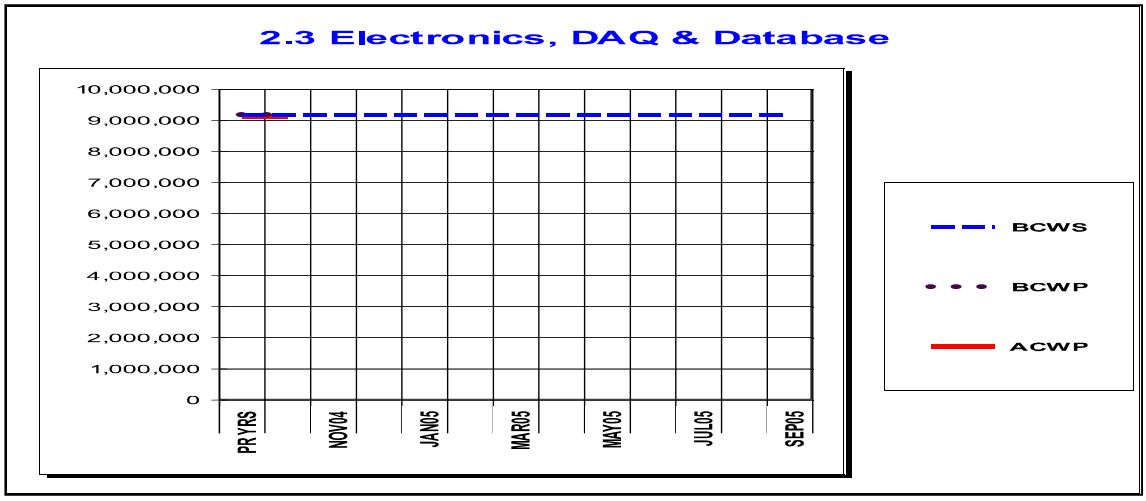
($000's Omitted)



	PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05
BCWS	7,621	7,621	7,621	7,621	7,621	7,621	7,621	7,621	7,621	7,621	7,621	7,621	7,621
BCWP	7,621	7,621											
ACWP	7,622	7,622											



	PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05
BCWS	19,525	19,525	19,525	19,525	19,525	19,525	19,525	19,525	19,525	19,525	19,525	19,525	19,525
BCWP	19,525	19,525											
ACWP	19,520	19,520											

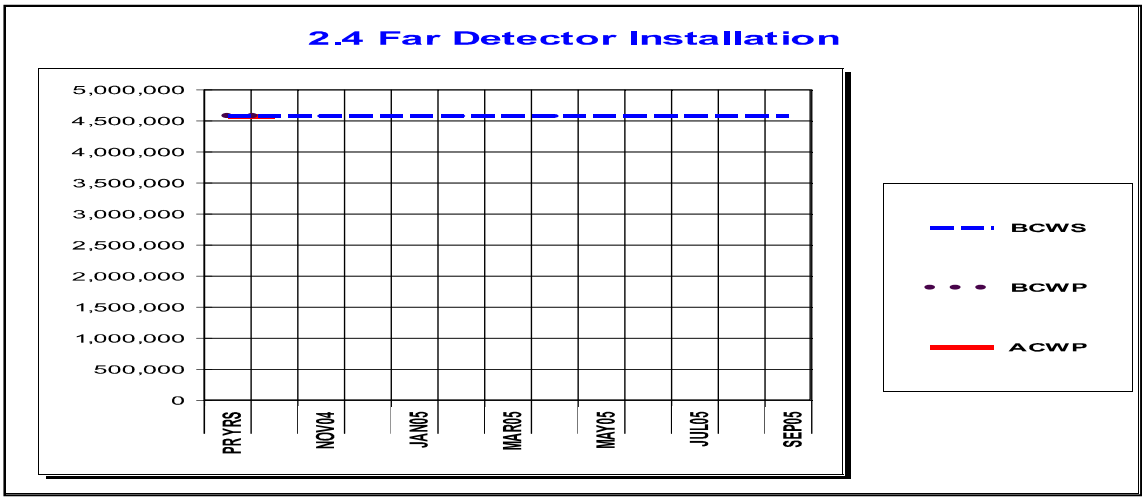


	PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05
BCWS	9,167	9,172	9,173	9,173	9,173	9,173	9,173	9,173	9,173	9,173	9,173	9,173	9,173
BCWP	9,173	9,173											
ACWP	9,133	9,134											

NuMI Other Project Costs

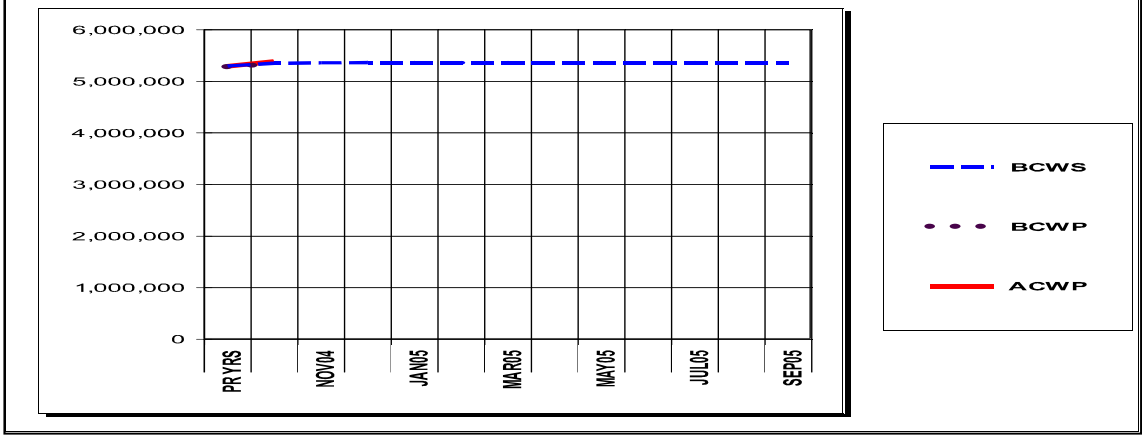
($000's Omitted)

2.4 Far Detector Installation



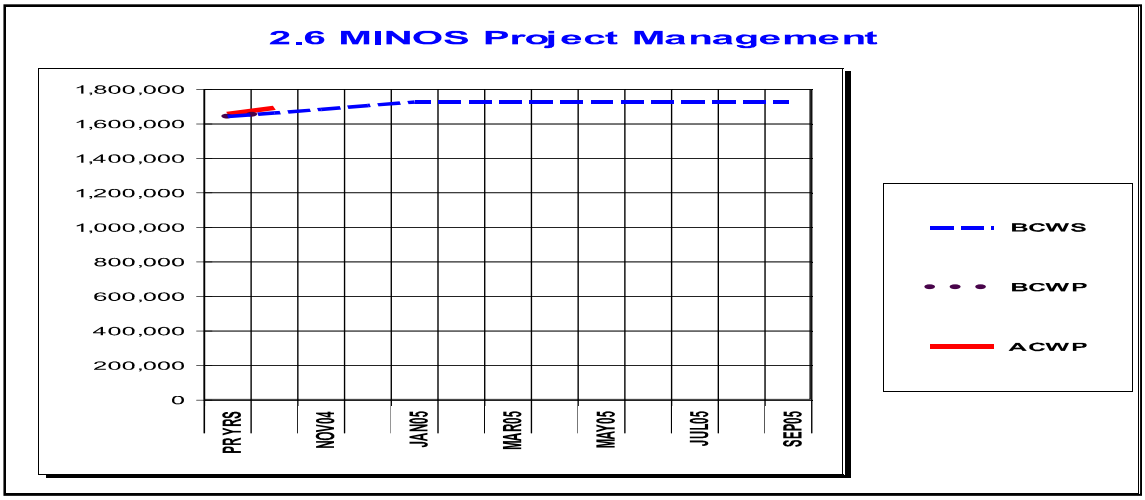
	PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05
BCWS	4,581	4,581	4,581	4,581	4,581	4,581	4,581	4,581	4,581	4,581	4,581	4,581	4,581
BCWP	4,581	4,581											
ACWP	4,577	4,577											

2.5 Near Detector Installation



	PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05
BCWS	5,297	5,350	5,360	5,361	5,361	5,361	5,361	5,361	5,361	5,361	5,361	5,361	5,361
BCWP	5,278	5,326											
ACWP	5,295	5,384											

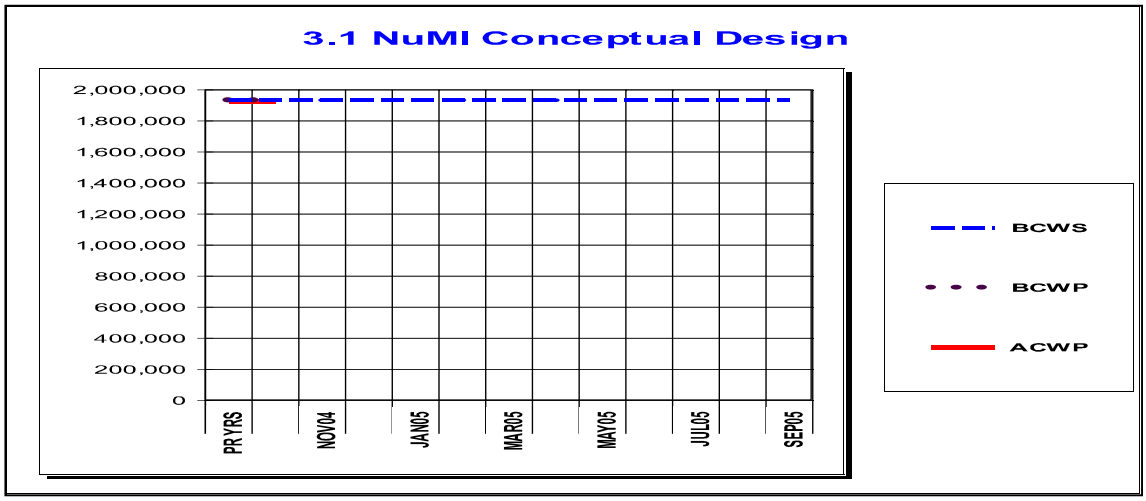
2.6 MINOS Project Management



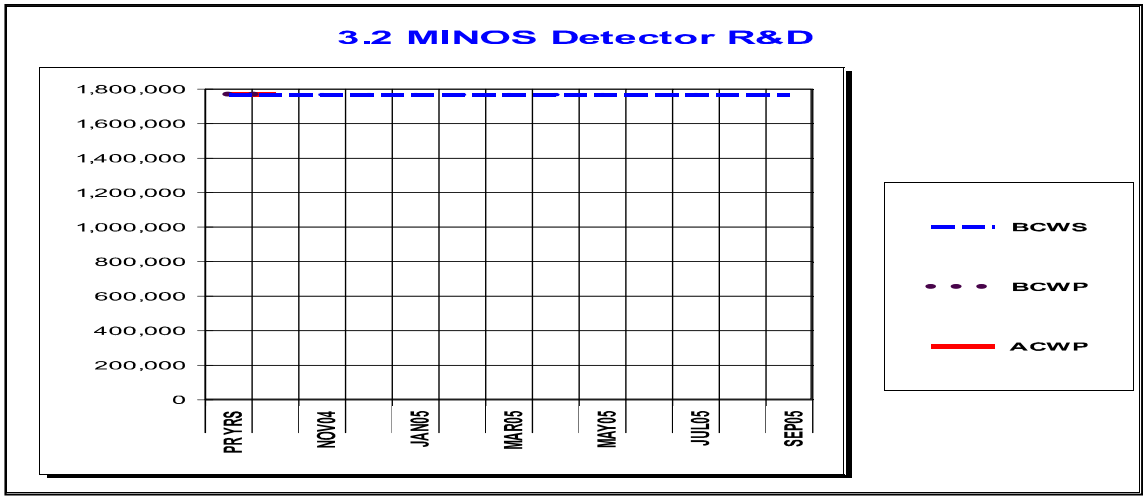
	PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05
BCWS	1,643	1,663	1,685	1,707	1,727	1,727	1,727	1,727	1,727	1,727	1,727	1,727	1,727
BCWP	1,643	1,664											
ACWP	1,657	1,693											

NuMI Other Project Costs

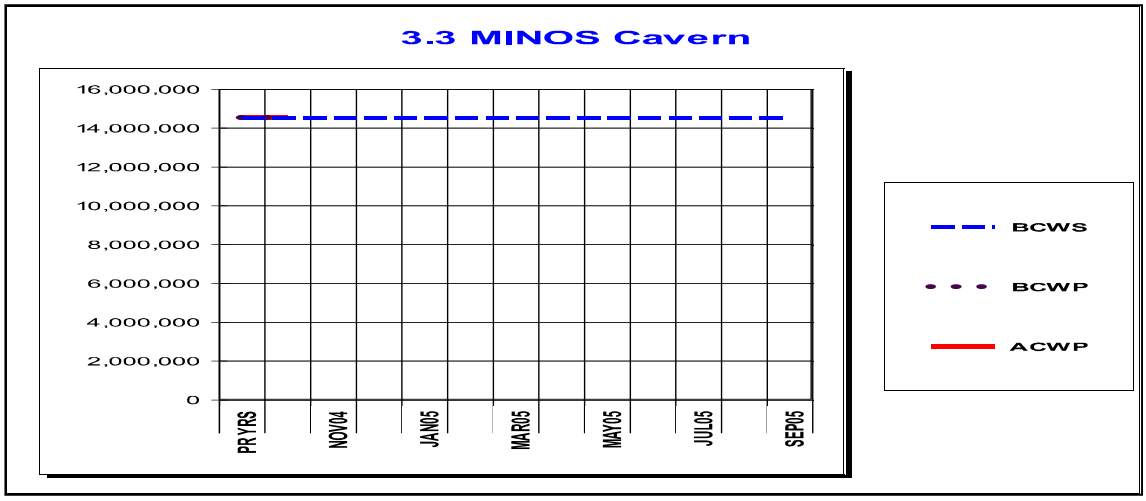
($000's Omitted)



	PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05
BCWS	1,934	1,934	1,934	1,934	1,934	1,934	1,934	1,934	1,934	1,934	1,934	1,934	1,934
BCWP	1,934	1,934											
ACWP	1,928	1,928											



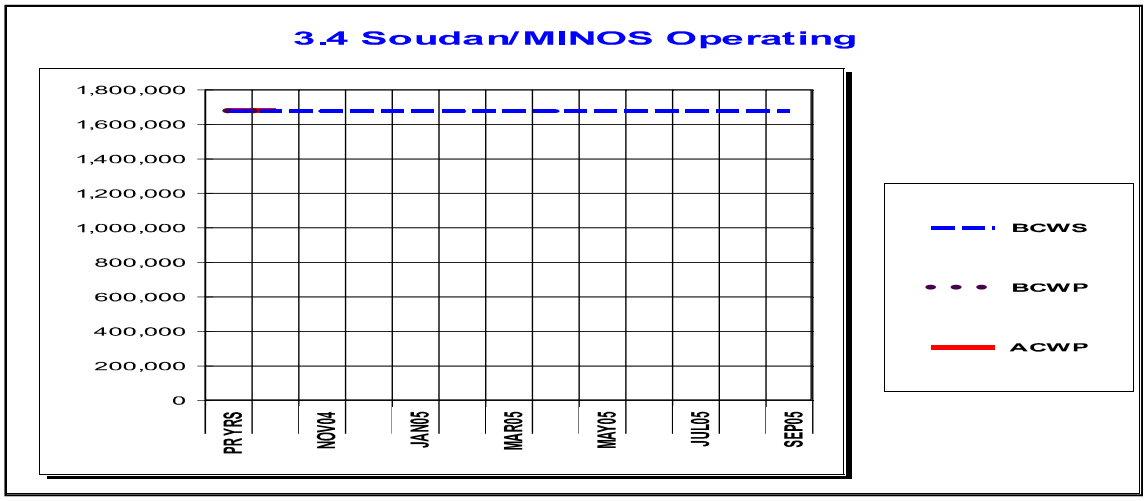
	PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05
BCWS	1,768	1,768	1,768	1,768	1,768	1,768	1,768	1,768	1,768	1,768	1,768	1,768	1,768
BCWP	1,768	1,768											
ACWP	1,768	1,768											



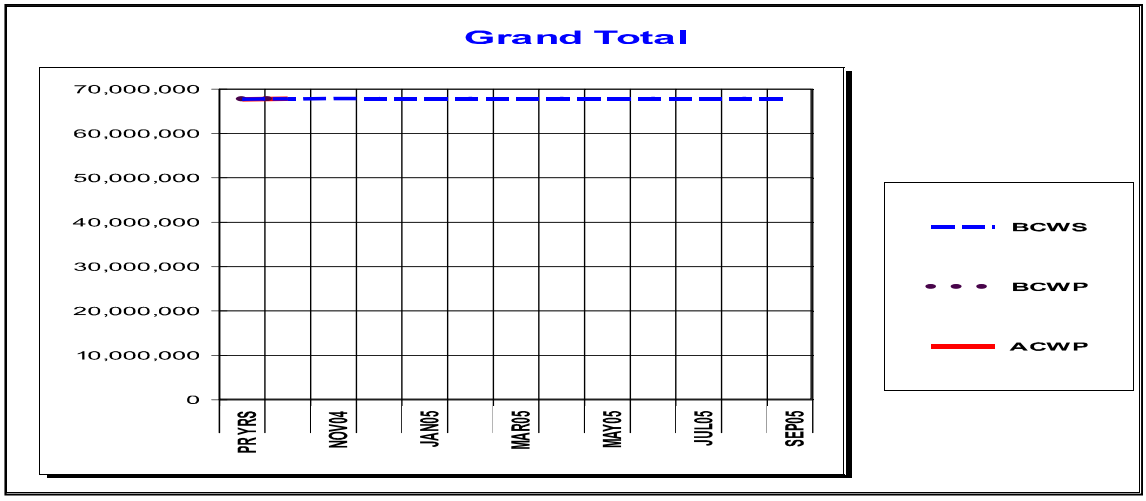
	PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05
BCWS	14,527	14,527	14,527	14,527	14,527	14,527	14,527	14,527	14,527	14,527	14,527	14,527	14,527
BCWP	14,527	14,527											
ACWP	14,527	14,527											

NuMI Other Project Costs

($000's Omitted)



	PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05
BCWS	1,677	1,677	1,677	1,677	1,677	1,677	1,677	1,677	1,677	1,677	1,677	1,677	1,677
BCWP	1,677	1,677											
ACWP	1,677	1,677											



	PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05
BCWS	67,740	67,818	67,850	67,874	67,894	67,894	67,894	67,894	67,894	67,894	67,894	67,894	67,894
BCWP	67,726	67,796											
ACWP	67,703	67,830											

NuMI Other Project Costs - US Funds

($000's Omitted)

Program:	Description:	Approval:
NUMIOPC	NuMI Other Proj Costs	Program Manager
Run Date: 11/09/04	Status Date: 10/31/2004	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05	TOTAL
2.1 Magnets: Steel & Coils															
2.1.1 Steel Plane Fabrication	BCWS	4,601	0	0	0	0	0	0	0	0	0	0	0	0	4,601
	ACWP	4,601	0	0	0	0	0	0	0	0	0	0	0	0	4,601
2.1.2 Steel handling fixtures	BCWS	793	0	0	0	0	0	0	0	0	0	0	0	0	793
	ACWP	793	0	0	0	0	0	0	0	0	0	0	0	0	793
2.1.3 Near Detector Support Structures	BCWS	1	0	0	0	0	0	0	0	0	0	0	0	0	1
	ACWP	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2.1.4 Magnet Coil	BCWS	1,673	0	0	0	0	0	0	0	0	0	0	0	0	1,673
	ACWP	1,672	0	0	0	0	0	0	0	0	0	0	0	0	1,672
2.1.5 Detector Plane Prototypes	BCWS	495	0	0	0	0	0	0	0	0	0	0	0	0	495
	ACWP	496	0	0	0	0	0	0	0	0	0	0	0	0	496
2.1.6 Steel Management	BCWS	57	0	0	0	0	0	0	0	0	0	0	0	0	57
	ACWP	58	0	0	0	0	0	0	0	0	0	0	0	0	58
WBS[2] Totals:	BCWS	7,621	0	0	0	0	0	0	0	0	0	0	0	0	7,621
	ACWP	7,622	0	0	0	0	0	0	0	0	0	0	0	0	7,622
2.2 Scintillator Detector Fabrication															
2.2.1 Scintillator Strips	BCWS	2,971	0	0	0	0	0	0	0	0	0	0	0	0	2,971
	ACWP	2,972	0	0	0	0	0	0	0	0	0	0	0	0	2,972
2.2.2 Fiber	BCWS	3,961	0	0	0	0	0	0	0	0	0	0	0	0	3,961
	ACWP	3,961	0	0	0	0	0	0	0	0	0	0	0	0	3,961
2.2.3 Scintillator Modules	BCWS	1,982	0	0	0	0	0	0	0	0	0	0	0	0	1,982
	ACWP	1,985	0	0	0	0	0	0	0	0	0	0	0	0	1,985
2.2.4 Photodetector Systems	BCWS	1,702	0	0	0	0	0	0	0	0	0	0	0	0	1,702
	ACWP	1,702	0	0	0	0	0	0	0	0	0	0	0	0	1,702
2.2.5 Mux Boxes & Connectors	BCWS	1,094	0	0	0	0	0	0	0	0	0	0	0	0	1,094
	ACWP	1,093	0	0	0	0	0	0	0	0	0	0	0	0	1,093
2.2.6 Calibration Systems	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.2.7 Ass'y & Test Equipment	BCWS	1,721	0	0	0	0	0	0	0	0	0	0	0	0	1,721
	ACWP	1,721	0	0	0	0	0	0	0	0	0	0	0	0	1,721
2.2.8 Factories	BCWS	3,279	0	0	0	0	0	0	0	0	0	0	0	0	3,279
	ACWP	3,271	0	0	0	0	0	0	0	0	0	0	0	0	3,271
2.2.9 Scintillator Management	BCWS	379	0	0	0	0	0	0	0	0	0	0	0	0	379
	ACWP	379	0	0	0	0	0	0	0	0	0	0	0	0	379
WBS[2] Totals:	BCWS	17,089	0	0	0	0	0	0	0	0	0	0	0	0	17,089
	ACWP	17,084	0	0	0	0	0	0	0	0	0	0	0	0	17,084
2.3 Electronics, DAQ & Database															
2.3.1 Near Detector Front End	BCWS	4,596	4	1	0	0	0	0	0	0	0	0	0	0	4,601
	ACWP	4,579	1	0	0	0	0	0	0	0	0	0	0	0	4,581
2.3.2 Far Detector Front-end	BCWS	1,197	0	0	0	0	0	0	0	0	0	0	0	0	1,197
	ACWP	1,196	0	0	0	0	0	0	0	0	0	0	0	0	1,196

NuMI Other Project Costs - US Funds

($000's Omitted)

Program:	Description:	Approval:
NUMIOPC	NuMI Other Proj Costs	Program Manager
Run Date: 11/09/04	Status Date: 10/31/2004	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05	TOTAL
2.3.5 Database	BCWS	10	0	0	0	0	0	0	0	0	0	0	0	0	10
	ACWP	10	0	0	0	0	0	0	0	0	0	0	0	0	10
2.3.6 Auxilliary Systems	BCWS	252	0	0	0	0	0	0	0	0	0	0	0	0	252
	ACWP	253	0	0	0	0	0	0	0	0	0	0	0	0	253
2.3.7 Electronics Management	BCWS	218	0	0	0	0	0	0	0	0	0	0	0	0	218
	ACWP	218	0	0	0	0	0	0	0	0	0	0	0	0	218
2.3.8 Slow Control & Monitoring	BCWS	419	0	0	0	0	0	0	0	0	0	0	0	0	419
	ACWP	400	0	0	0	0	0	0	0	0	0	0	0	0	400
2.3.9 HV System	BCWS	77	0	0	0	0	0	0	0	0	0	0	0	0	77
	ACWP	77	0	0	0	0	0	0	0	0	0	0	0	0	77
WBS[2] Totals:	BCWS	6,769	4	1	0	0	0	0	0	0	0	0	0	0	6,774
	ACWP	6,734	1	0	0	0	0	0	0	0	0	0	0	0	6,735
2.4 Far Detector Installation															
2.4.1 FDI Completed Design Tasks	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.4.2 FDI Management	BCWS	584	0	0	0	0	0	0	0	0	0	0	0	0	584
	ACWP	584	0	0	0	0	0	0	0	0	0	0	0	0	584
2.4.3 SDN-FDI Construction Oversight	BCWS	115	0	0	0	0	0	0	0	0	0	0	0	0	115
	ACWP	115	0	0	0	0	0	0	0	0	0	0	0	0	115
2.4.4 FDI Soudan Lab Infrastructure Setup	BCWS	473	0	0	0	0	0	0	0	0	0	0	0	0	473
	ACWP	473	0	0	0	0	0	0	0	0	0	0	0	0	473
2.4.5 SDN-FDI Detector Installation	BCWS	2,960	0	0	0	0	0	0	0	0	0	0	0	0	2,960
	ACWP	2,959	0	0	0	0	0	0	0	0	0	0	0	0	2,959
2.4.6 SDN-FDI DNR Costs	BCWS	382	0	0	0	0	0	0	0	0	0	0	0	0	382
	ACWP	378	0	0	0	0	0	0	0	0	0	0	0	0	378
2.4.7 FDI Alignment & Survey	BCWS	67	0	0	0	0	0	0	0	0	0	0	0	0	67
	ACWP	67	0	0	0	0	0	0	0	0	0	0	0	0	67
WBS[2] Totals:	BCWS	4,581	0	0	0	0	0	0	0	0	0	0	0	0	4,581
	ACWP	4,577	0	0	0	0	0	0	0	0	0	0	0	0	4,577
2.5 Near Detector Installation															
2.5.1 NDI Infrastructure	BCWS	512	0	0	0	0	0	0	0	0	0	0	0	0	512
	ACWP	431	18	0	0	0	0	0	0	0	0	0	0	0	449
2.5.2 NDI Plane Assembly	BCWS	516	0	0	0	0	0	0	0	0	0	0	0	0	516
	ACWP	514	0	0	0	0	0	0	0	0	0	0	0	0	514
2.5.3 NDI Detector Installation	BCWS	1,087	53	9	2	0	0	0	0	0	0	0	0	0	1,151
	ACWP	1,164	69	0	0	0	0	0	0	0	0	0	0	0	1,234
2.5.4 NDI Facility Experimental Infrastructure	BCWS	238	0	0	0	0	0	0	0	0	0	0	0	0	238
	ACWP	241	2	0	0	0	0	0	0	0	0	0	0	0	243
2.5.5 RBI SB&O Experimental Systems Outfitting	BCWS	2,944	0	0	0	0	0	0	0	0	0	0	0	0	2,944
	ACWP	2,944	0	0	0	0	0	0	0	0	0	0	0	0	2,944
WBS[2] Totals:	BCWS	5,297	53	9	2	0	0	0	0	0	0	0	0	0	5,361
	ACWP	5,295	89	0	0	0	0	0	0	0	0	0	0	0	5,384

NuMI Other Project Costs - US Funds

($000's Omitted)

Program:	Description:	Approval:
NUMIOPC	NuMI Other Proj Costs	Program Manager
Run Date: 11/09/04	Status Date: 10/31/2004	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05	TOTAL
2.6 MINOS Project Management															
2.6.1 FNL-Project Management	BCWS	1,545	20	21	22	20	0	0	0	0	0	0	0	0	1,629
	ACWP	1,559	36	0	0	0	0	0	0	0	0	0	0	0	1,595
2.6.2 ANL-Project Management	BCWS	98	0	0	0	0	0	0	0	0	0	0	0	0	98
	ACWP	98	0	0	0	0	0	0	0	0	0	0	0	0	98
WBS[2] Totals:	BCWS	1,643	20	21	22	20	0	0	0	0	0	0	0	0	1,727
	ACWP	1,657	36	0	0	0	0	0	0	0	0	0	0	0	1,693
3.1 NuMI Conceptual Design															
3.1.1 FNL-BD-NuMI CDR	BCWS	489	0	0	0	0	0	0	0	0	0	0	0	0	489
	ACWP	487	0	0	0	0	0	0	0	0	0	0	0	0	487
3.1.2 FNL-BD-NuMI FESS CDR	BCWS	346	0	0	0	0	0	0	0	0	0	0	0	0	346
	ACWP	346	0	0	0	0	0	0	0	0	0	0	0	0	346
3.1.3 FNL-NuMI Beam Design	BCWS	798	0	0	0	0	0	0	0	0	0	0	0	0	798
	ACWP	796	0	0	0	0	0	0	0	0	0	0	0	0	796
3.1.4 FNL-BD-NuMI Project Management	BCWS	235	0	0	0	0	0	0	0	0	0	0	0	0	235
	ACWP	234	0	0	0	0	0	0	0	0	0	0	0	0	234
3.1.5 FNL-Soudan Lab Design	BCWS	65	0	0	0	0	0	0	0	0	0	0	0	0	65
	ACWP	65	0	0	0	0	0	0	0	0	0	0	0	0	65
WBS[2] Totals:	BCWS	1,934	0	0	0	0	0	0	0	0	0	0	0	0	1,934
	ACWP	1,928	0	0	0	0	0	0	0	0	0	0	0	0	1,928
3.2 MINOS Detector R&D															
3.2.1 FNL-MINOS Scintillator R&D	BCWS	988	0	0	0	0	0	0	0	0	0	0	0	0	988
	ACWP	988	0	0	0	0	0	0	0	0	0	0	0	0	988
3.2.2 FNL-MINOS Steel R&D	BCWS	644	0	0	0	0	0	0	0	0	0	0	0	0	644
	ACWP	644	0	0	0	0	0	0	0	0	0	0	0	0	644
3.2.3 FNL-RD-Neutrino Oscillation R&D	BCWS	136	0	0	0	0	0	0	0	0	0	0	0	0	136
	ACWP	136	0	0	0	0	0	0	0	0	0	0	0	0	136
WBS[2] Totals:	BCWS	1,768	0	0	0	0	0	0	0	0	0	0	0	0	1,768
	ACWP	1,768	0	0	0	0	0	0	0	0	0	0	0	0	1,768
3.3 MINOS Cavern															
3.3.0 Preconstruction Work	BCWS	758	0	0	0	0	0	0	0	0	0	0	0	0	758
	ACWP	758	0	0	0	0	0	0	0	0	0	0	0	0	758
3.3.1 Cavern Construction	BCWS	6,597	0	0	0	0	0	0	0	0	0	0	0	0	6,597
	ACWP	6,597	0	0	0	0	0	0	0	0	0	0	0	0	6,597
3.3.2 Cavern Outfitting	BCWS	7,171	0	0	0	0	0	0	0	0	0	0	0	0	7,171
	ACWP	7,171	0	0	0	0	0	0	0	0	0	0	0	0	7,171
WBS[2] Totals:	BCWS	14,527	0	0	0	0	0	0	0	0	0	0	0	0	14,527
	ACWP	14,527	0	0	0	0	0	0	0	0	0	0	0	0	14,527

NuMI Other Project Costs - US Funds

($000's Omitted)

Program:	Description:	Approval:
NUMIOPC	NuMI Other Proj Costs	Program Manager
Run Date: 11/09/04	Status Date: 10/31/2004	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05	TOTAL
3.4 Soudan/MINOS Operating															
3.4.1 UMN-Mine Crew Support/Soudan Gen'l Operations	BCWS	1,531	0	0	0	0	0	0	0	0	0	0	0	0	1,531
	ACWP	1,531	0	0	0	0	0	0	0	0	0	0	0	0	1,531
3.4.2 UMN-Breitung Township Building Rental	BCWS	75	0	0	0	0	0	0	0	0	0	0	0	0	75
	ACWP	75	0	0	0	0	0	0	0	0	0	0	0	0	75
3.4.3 UMN-E Peterson Salary	BCWS	71	0	0	0	0	0	0	0	0	0	0	0	0	71
	ACWP	71	0	0	0	0	0	0	0	0	0	0	0	0	71
WBS[2] Totals:	BCWS	1,677	0	0	0	0	0	0	0	0	0	0	0	0	1,677
	ACWP	1,677	0	0	0	0	0	0	0	0	0	0	0	0	1,677
Grand Totals:	BCWS	62,906	78	32	24	20	0	0	0	0	0	0	0	0	63,059
	ACWP	62,868	127	0	0	0	0	0	0	0	0	0	0	0	62,995

NuMI Other Project Costs - US Funds - Labor Only

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Run Date: 11/09/04	Status Date: 10/31/2004	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05	TOTAL
2.1 Magnets: Steel & Coils															
2.1.1 Steel Plane Fabrication	BCWS	130	0	0	0	0	0	0	0	0	0	0	0	0	130
	ACWP	171	0	0	0	0	0	0	0	0	0	0	0	0	171
2.1.2 Steel handling fixtures	BCWS	437	0	0	0	0	0	0	0	0	0	0	0	0	437
	ACWP	560	0	0	0	0	0	0	0	0	0	0	0	0	560
2.1.3 Near Detector Support Structures	BCWS	36	0	0	0	0	0	0	0	0	0	0	0	0	36
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.1.4 Magnet Coil	BCWS	564	0	0	0	0	0	0	0	0	0	0	0	0	564
	ACWP	839	0	0	0	0	0	0	0	0	0	0	0	0	839
2.1.5 Detector Plane Prototypes	BCWS	355	0	0	0	0	0	0	0	0	0	0	0	0	355
	ACWP	375	0	0	0	0	0	0	0	0	0	0	0	0	375
2.1.6 Steel Management	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	1	0	0	0	0	0	0	0	0	0	0	0	0	1
WBS[2] Totals:	BCWS	1,522	0	0	0	0	0	0	0	0	0	0	0	0	1,522
	ACWP	1,946	0	0	0	0	0	0	0	0	0	0	0	0	1,946
2.2 Scintillator Detector Fabrication															
2.2.1 Scintillator Strips	BCWS	111	0	0	0	0	0	0	0	0	0	0	0	0	111
	ACWP	344	0	0	0	0	0	0	0	0	0	0	0	0	344
2.2.2 Fiber	BCWS	8	0	0	0	0	0	0	0	0	0	0	0	0	8
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.2.3 Scintillator Modules	BCWS	11	0	0	0	0	0	0	0	0	0	0	0	0	11
	ACWP	284	0	0	0	0	0	0	0	0	0	0	0	0	284
2.2.5 Mux Boxes & Connectors	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	37	0	0	0	0	0	0	0	0	0	0	0	0	37
2.2.6 Calibration Systems	BCWS	3	0	0	0	0	0	0	0	0	0	0	0	0	3
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.2.7 Ass'y & Test Equipment	BCWS	9	0	0	0	0	0	0	0	0	0	0	0	0	9
	ACWP	139	0	0	0	0	0	0	0	0	0	0	0	0	139
2.2.8 Factories	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.2.9 Scintillator Management	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	144	0	0	0	0	0	0	0	0	0	0	0	0	144
	ACWP	805	0	0	0	0	0	0	0	0	0	0	0	0	805
2.3 Electronics, DAQ & Database															
2.3.1 Near Detector Front End	BCWS	444	0	0	0	0	0	0	0	0	0	0	0	0	444
	ACWP	831	0	0	0	0	0	0	0	0	0	0	0	0	831
2.3.2 Far Detector Front-end	BCWS	112	0	0	0	0	0	0	0	0	0	0	0	0	112
	ACWP	176	0	0	0	0	0	0	0	0	0	0	0	0	176
2.3.6 Auxilliary Systems	BCWS	148	0	0	0	0	0	0	0	0	0	0	0	0	148
	ACWP	172	0	0	0	0	0	0	0	0	0	0	0	0	172

NuMI Other Project Costs - US Funds - Labor Only

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Run Date: 11/09/04	Status Date: 10/31/2004	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05	TOTAL
2.3.7 Electronics Management	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.3.8 Slow Control & Monitoring	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	6	0	0	0	0	0	0	0	0	0	0	0	0	6
2.3.9 HV System	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	705	0	0	0	0	0	0	0	0	0	0	0	0	705
	ACWP	1,185	0	0	0	0	0	0	0	0	0	0	0	0	1,185
2.4 Far Detector Installation															
2.4.1 FDI Completed Design Tasks	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.4.2 FDI Management	BCWS	89	0	0	0	0	0	0	0	0	0	0	0	0	89
	ACWP	47	0	0	0	0	0	0	0	0	0	0	0	0	47
2.4.4 FDI Soudan Lab Infrastructure Setup	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	7	0	0	0	0	0	0	0	0	0	0	0	0	7
2.4.7 FDI Alignment & Survey	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	89	0	0	0	0	0	0	0	0	0	0	0	0	89
	ACWP	54	0	0	0	0	0	0	0	0	0	0	0	0	54
2.5 Near Detector Installation															
2.5.1 NDI Infrastructure	BCWS	389	0	0	0	0	0	0	0	0	0	0	0	0	389
	ACWP	145	0	0	0	0	0	0	0	0	0	0	0	0	145
2.5.2 NDI Plane Assembly	BCWS	501	0	0	0	0	0	0	0	0	0	0	0	0	501
	ACWP	468	0	0	0	0	0	0	0	0	0	0	0	0	468
2.5.3 NDI Detector Installation	BCWS	951	45	2	1	0	0	0	0	0	0	0	0	0	999
	ACWP	786	59	0	0	0	0	0	0	0	0	0	0	0	845
2.5.4 NDI Facility Experimental Infrastructure	BCWS	37	0	0	0	0	0	0	0	0	0	0	0	0	37
	ACWP	58	0	0	0	0	0	0	0	0	0	0	0	0	58
2.5.5 RBI SB&O Experimental Systems Outfitting	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	1,878	45	2	1	0	0	0	0	0	0	0	0	0	1,926
	ACWP	1,456	59	0	0	0	0	0	0	0	0	0	0	0	1,515
2.6 MINOS Project Management															
2.6.1 FNL-Project Management	BCWS	1,496	20	21	22	20	0	0	0	0	0	0	0	0	1,580
	ACWP	1,410	36	0	0	0	0	0	0	0	0	0	0	0	1,446
2.6.2 ANL-Project Management	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	1,496	20	21	22	20	0	0	0	0	0	0	0	0	1,580
	ACWP	1,410	36	0	0	0	0	0	0	0	0	0	0	0	1,446
3.1 NuMI Conceptual Design															
3.1.1 FNL-BD-NuMI CDR	BCWS	99	0	0	0	0	0	0	0	0	0	0	0	0	99
	ACWP	99	0	0	0	0	0	0	0	0	0	0	0	0	99

NuMI Other Project Costs - US Funds - Labor Only

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Program:	Description:	Approval:
NUMIOPC	NuMI Other Proj Costs	Program Manager
Run Date: 11/09/04	Status Date: 10/31/2004	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05	TOTAL
3.1.2 FNL-BD-NuMI FESS CDR	BCWS	112	0	0	0	0	0	0	0	0	0	0	0	0	112
	ACWP	112	0	0	0	0	0	0	0	0	0	0	0	0	112
3.1.3 FNL-NuMI Beam Design	BCWS	530	0	0	0	0	0	0	0	0	0	0	0	0	530
	ACWP	529	0	0	0	0	0	0	0	0	0	0	0	0	529
3.1.4 FNL-BD-NuMI Project Management	BCWS	132	0	0	0	0	0	0	0	0	0	0	0	0	132
	ACWP	132	0	0	0	0	0	0	0	0	0	0	0	0	132
3.1.5 FNL-Soudan Lab Design	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	872	0	0	0	0	0	0	0	0	0	0	0	0	872
	ACWP	872	0	0	0	0	0	0	0	0	0	0	0	0	872
3.2 MINOS Detector R&D															
3.2.1 FNL-MINOS Scintillator R&D	BCWS	7	0	0	0	0	0	0	0	0	0	0	0	0	7
	ACWP	6	0	0	0	0	0	0	0	0	0	0	0	0	6
3.2.2 FNL-MINOS Steel R&D	BCWS	46	0	0	0	0	0	0	0	0	0	0	0	0	46
	ACWP	46	0	0	0	0	0	0	0	0	0	0	0	0	46
3.2.3 FNL-RD-Neutrino Oscillation R&D	BCWS	9	0	0	0	0	0	0	0	0	0	0	0	0	9
	ACWP	9	0	0	0	0	0	0	0	0	0	0	0	0	9
WBS[2] Totals:	BCWS	62	0	0	0	0	0	0	0	0	0	0	0	0	62
	ACWP	62	0	0	0	0	0	0	0	0	0	0	0	0	62
3.4 Soudan/MINOS Operating															
3.4.1 UMN-Mine Crew Support/Soudan Gen'l Operations	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	1	0	0	0	0	0	0	0	0	0	0	0	0	1
3.4.2 UMN-Breitung Township Building Rental	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Totals:	BCWS	6,768	65	23	24	20	0	0	0	0	0	0	0	0	6,899
	ACWP	7,791	95	0	0	0	0	0	0	0	0	0	0	0	7,886